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Original Contributions.

PATHOLOGY, CHEMISTRY AND THERAPEUTICS OF PUTRESCENT PULPS.

By A. H. PECK, M.D., D.D.S., CHICAGO.

Some months ago I was requested by a local society to read a "five or eight minute" paper. At that time I was conducting a series of experiments in connection with the subject matter which I shall present in this paper. As my work at that time was not completed, I was able only to refer to it in the short time allotted; and I wish to say now, that two or three lines of thought presented in that paper as fact should not have been so stated, because the experimental work followed to completeness has so demonstrated; but as the work stood at that time, in its uncompleted form, I seemed justified in presenting the thoughts. In this paper I shall avail myself of the opportunity to correct them.

In considering this subject in a systematic way, we would first naturally wish to know what constitutes a state of putrescence; what changes in the parts involved are necessary that this condition may be brought about; and what elements, if such we may term them, are evolved and necessary to be destroyed. By consulting various authors to find a satisfactory definition of this condition a variety of opinions will be found; some asserting positively this or that, others so framing their statement that more or less doubt and uncertainty is indicated. We find in Dunglison's Medical Dictionary a more complete and reasonable definition than in any other. He says *putrefaction* is "The decomposition experienced by animal substances when deprived of life and placed under special circumstances. Such change is now in the light of modern research considered as resulting from the action of saprophitic microorganisms. Presence of water is indispensable; the temperature most favorable to it is from sixty to ninety degrees F. The most common products of putrefaction are water, carbonic acid, acetic acid, ammonia, car-

buretted hydrogen, and a semiputrid substance which is volatilized and has an infected odor. State of becoming putrid."

No one denies that the old "chemical theory," if such I may term it, of putrefaction has passed from us never to return. All modern authors on pathological matters are agreed, that after nitrogenous matter has been deprived of its blood-supply, its vitality taken away, thus being changed to a state of gangrene, it must be invaded with microorganisms before the putrefactive process may be inaugurated.

From my experimental work, I find it exceedingly difficult, perhaps impossible, to definitely determine just what are the principal gases and various other products necessary to be destroyed, and that cause us most trouble when we come to apply our therapeutics.

The statement that "hydrogen sulphid is the chief gas evolved" in putrescent pulps has generally been accepted as correct. The first of my experimental work seemed to verify that statement, but later I found it to be incorrect. Indeed, one who studies the process of decomposition of nitrogenous matter carefully, and from a chemical standpoint, must conclude that the exact nature of these products of decomposition which yield odor cannot be definitely determined. It has heretofore been generally stated by dentists that the odor from putrescent pulps is due to the presence of *hydrogen sulphid*. When nitrogenous matter, as for example egg albumen, contains *sulphur*, hydrogen sulphid is undoubtedly a final product of the process of decomposition, and in part must be responsible for the odor evolved. I say in part, because these nitrogenous substances containing sulphur have been treated in various ways, in connection with the putrefactive process, and I have not been able to produce any such odor as sometimes emanates from the pulp-chamber of a tooth.

It is true that the human system contains more or less sulphur, and is the supposition an unreasonable one that dead pulps of teeth contain this element, although it may be present in minute quantities? This granted, are we warranted in attributing all the odor encountered in some cases to the evolution of hydrogen sulphid from the necessarily small quantity of sulphur present? Or is the supposition a reasonable one, that from a union of various other elements that are present, or products that are being evolved, there is generated another odorous substance, other than hydrogen sul-

phid, but the distinguishing characteristics of which in no essential particular differ? I do not feel warranted in making this statement as fact, but from the work accomplished thus far it would seem to be so.

Perhaps from a purely practical standpoint it is not necessary that we understand these things—however, he who would treat these cases intelligently and from a scientific standpoint should seek as complete a knowledge of these conditions as possible, so that knowing the varied therapeutic value of his medicinal agents he may be able to apply those that are best calculated to destroy these obnoxious products of the putrefactive process.

Again, from a careful chemical study of this process, it will be found that ammonia (NH_3) is in all probability the chief final gaseous product, but it is the opinion of the chemists that this has little to do in the formation of the foul odors. I have also determined that *water*, *oxids of nitrogen* and even *free nitrogen*, and most important among these, *carbonic acid gas*, are prominent among the final products of decomposition.

The foregoing are undoubtedly the principal elements, both pathological and chemical, that are naturally found in connection with putrescent pulps, but these are not all. We are forcibly reminded of this fact when we stop to consider that discolored teeth nearly always have previously contained putrescent pulps, or those in connection with which abscesses have formed. We are also familiar with the fact that chemical elements other than those already enumerated are in all probability present; and further, the all-important fact that they are continually uniting, only to lose their individual identity; and as a result of these chemical unions certain other elements of an entirely different nature are produced which are directly responsible for the production of other undesirable results.

Of all the metals iron is no doubt most intimately disseminated throughout the system. An excess of iron may be present in the blood of an individual, and if so the pulps of the teeth will contain their proportionate excess of the metal in the red blood corpuscles. It is the opinion of chemists that an "excess" of the metal in the system is not necessary in order that the following chemical action may take place. In case of putrescent pulp the red blood corpuscles are broken up and the iron is set free. This unites with the hydrogen sulphid present, and sulphid of iron is the result of this

chemical union. Reflect on the number of discolored teeth that come under our observation, in which it seems certain that the discoloration is effected by some salt of iron.

Is it not a reasonable statement, that in individuals who are suffering from pytalism, systemic poisoning by mercury, more or less of this metal finds its way into the pulps of teeth and unites with a portion of the hydrogen sulphid, the result being the formation of *sulphid of mercury*? There may be an excess of manganese in the system, or of lead or other poisonous metals, in which case the *sulphid* of the respective metals may be found in the decaying pulps. Thus it will be seen there are many elements to be considered and to be gotten rid of in the treatment of putrescent pulps, other than microorganisms and their poisonous products.

Putrescent pulps of teeth of individuals who were suffering with pytalism and others with plumbism have been subjected to proper chemical tests, with the idea of revealing the presence of these metals and their sulphids. While this work is exceedingly delicate, and I must confess for the most part unsatisfactory as regards the two metals last named, sufficient has, however, been determined to warrant the statements above made regarding these chemical actions and the formation of these sulphids. As regards the presence of iron and its sulphid there is no doubt left.

Before proceeding with the therapeutics of these cases let us consider some of the seemingly mysterious happenings under certain conditions with putrescent pulps. The fact that pulps die in some teeth and lie dormant for months and even years without causing trouble; and the further fact that the moment the pulp-chamber is opened, thus admitting air and saliva, there is inaugurated an activity that is certainly surprising and seemingly unwarranted, are of interest to us. I have seen cases in practice where seemingly all the processes and changes, both pathological and chemical, incident to putrefying pulps have been inaugurated almost instantly on opening into the pulp-chambers, and notwithstanding that the utmost care has been used in the treatment of them severe apical pericementitis has been caused, and in rare instances even abscesses have resulted. There must be a reason for this, otherwise these cases should yield nicely to treatment as many others do. I have tried to solve this question by adding *fact* to our present theory, but frankly confess that I have been able to accomplish little.

There are many classes of microorganisms that lie dormant, that do not excite fermentation in the absence of oxygen; hence the inactivity of those elements before air is admitted into the pulp-chambers. The moment air passes in, however, the oxygen necessary to arouse to activity these hitherto dormant elements is imparted to them, the varying degrees of activity thus induced being dependent upon the susceptibility and character of the elements present. The fact that with careless operators other microorganisms of perhaps a more virulent and active nature are admitted with the saliva must be a potent factor in causing the rapid and severe changes that occur. In the light of our present knowledge the above explanation seems the rational one for the overactivity of those cases as described, but I believe there is opportunity for further enlightenment on this point.

The fact that the crowns of many teeth containing dead pulps, and hitherto not discolored to any appreciable extent, on being opened into, thus permitting saliva and air to come in contact with the decaying tissue, do discolor excessively in a very short time, is not an infrequent source of much wonder and humiliation. For example, a patient presents with a tooth containing a dead pulp that is causing trouble. The dentist is occupied with other work and can not take the necessary time to make proper treatment. He simply opens into the canal, that the gases which are being generated may escape, thus affording relief to the patient. As stated above, the tooth at this time is not discolored. The patient is dismissed with instructions to return the next day or the day following, when proper attention will be given to the case. At the second sitting it is observed that the tooth is discolored very much, this change having taken place within a very short time. What is the explanation?

It is the same line of reasoning as in connection with the overactivity of the microorganisms in these cases. The various processes incident to putrefaction are intensified when saliva and air are brought in contact with the decaying mass. This seems especially true of those changes or processes which result in the formation of the coloring materials. The reaction, caused by a union especially of the hydrogen sulphid and the oxygenated hemoglobin of the blood, is intensified, thus resulting in the formation of perhaps the chief coloring material, called sulphomethemoglobin, in much less

time and in larger quantities than when oxygen is not admitted. The dentinal tubules become saturated with this and other coloring materials, the formation of which is thus unduly brought about. In therapeutic applications to these cases such occurrences must be avoided. He who permits an undisclored tooth containing a dead pulp to become discolored to any extent after treatment is commenced is certainly deserving of censure in the majority of cases. After treatment is begun no foreign substances or even medicines should be permitted in contact with the tooth-structure or the contents of the pulp-chambers, except those that are needed to best subserve the interests of the treatment, and that are placed there by the dentist himself. We can not have impressed upon our minds too strongly the importance of extreme care in this regard.

From all this you will readily appreciate the force of the statement, that if we would treat these cases intelligently and scientifically, it is not enough that we simply use a good germicide and deodorant. We must be familiar with the various properties of the medicinal agents to be used and understand their power of destroying the many different elements present in this condition. I would that we could all be first-class chemists, both analytical and synthetic, for then we could subject our medicines to the necessary tests and analyses to determine whether or not they are best suited to successfully combat the various conditions, both pathological and chemical, to which they are being applied, and failing in this, we might be able to compound a remedy that would better subserve the purpose to which it is put. If we have a clear understanding of the various compounds that must be destroyed, and also in a general way of the peculiar properties of the medicines to be used that render them suitable agents to be applied to these various conditions, we are able to treat them intelligently, and with a reasonable degree of assurance of favorable results.

There can be no doubt that in the therapeutics of putrescent pulps those medicinal agents that contain *oxygen* as one of their principal elements, and which are easily broken up, thus freeing the oxygen or a portion of it, are most effective. We must remember that this element, oxygen, when in proper combination is one of the best agents that we have for the treatment of such conditions as obtain in putrescent pulps, and is one of the best of germicides, deodorants and bleachers—the three principal properties to be pos-

sessed by medicines used in these cases. For the reasons cited above I have always contended that the conservative use of such agents as peroxid of hydrogen, hydrozone and pyrozone constitutes a form of treatment which can not be excelled for thorough cleansing. I would, however, advise operators to be very careful in their use of these agents in pulp-canals, and especially that they be careful to secure a full free opening for the exit of the gas evolved, for if the exit be in any way obstructed it will press through the apical foramen and perhaps carry poisonous material before it to the soft tissues of the apical space, causing trouble.

There is an unlimited number of agents containing oxygen that might be used in these cases, but it must be remembered that only those which readily liberate oxygen at ordinary temperatures, that is, those which contain available oxygen, are effective. Water (H_2O), for example, contains oxygen, but it is not an active oxidizing agent, because the affinity between the hydrogen and oxygen is so strong that the latter is not readily liberated under ordinary conditions, as is the case with peroxid of hydrogen (H_2O_2) and the other agents belonging to the same group. In these compounds the combination is very unstable, and they readily break up into $H_2O + O$, and this nascent O, thus liberated, brings about the strong oxidizing action characteristic of these agents.

Potassium permanganate, with a chemical formula of $K Mn O_4$, in proper solution is a valuable agent in the treatment of these cases. Nascent O is readily liberated and enters into combination with the various products of the putrefactive process and by oxidation destroys them. As a deodorant it is one of the best agents we have. We may truthfully say that *nascent oxygen* is the only great chemical purifier. Indeed, this is nature's method of getting rid of such objectionable conditions as these under consideration.

In a previous paper I am made to say that "no medicines should be used in these cases and remain any length of time, until the contents of the pulp-canals have been as carefully and thoroughly removed as possible by mechanical means." There is some probability that this statement may be misunderstood. I do not mean it should be our aim to completely remove the putrescent material from the pulp-canals at the first sitting—perhaps some of us are familiar with the extreme ease with which poisonous material is forced through the apical foramen, causing abscesses to develop.

What I mean is, that after a portion of the putrescent material has been removed, the medicinal agent placed in the canal should not be permitted to stay more than two or three days before the remainder is carefully but thoroughly removed. If permitted to remain too long discoloration is probable and not infrequently occurs as a result of the action of the medicine and the various elements contained in the putrefactive mass.

There is an agent to be used especially as a deodorant about which we hear little, but it is one which I use with so much satisfaction that I deem it worthy of mention. It is meditrina. This is only purified sea-water charged with electricity, and while a fairly good antiseptic it is not so potent as has been claimed. Just how meditrina acts as a deodorant I have not by experimentation been able to definitely determine. I think, however, there is no doubt that its virtue in this connection is largely due to the nascent chlorine evolved by it. It is claimed that it enters chemically into combination with the mephitic odors and gases and in this way effects their destruction.

In the general treatment of these cases our thoughts most naturally revert to a consideration of the *essential oils*. That we may intelligently use these agents it is not sufficient that we understand only their value as antiseptics and germicides and their therapeutics as regards soft tissue; we must study them with a view of determining what other properties or elementary constituents they possess that render them useful in destroying the various products of the putrefactive process, as well as the microorganisms and their poisonous products. A study of these oils from a chemical standpoint is a very delicate matter and unsatisfactory in a large degree, as it is difficult to definitely determine facts.

From the U. S. P. we obtain a partial classification, and I have been able to determine some things in addition. Putting them all together, I am pleased to present the following classification: First, those composed of hydrocarbons only, as oils consisting chiefly of terpenes ($C_{10}H_{16}$), such as oil of turpentine, of lemon and of camphor. Second, those containing hydrocarbons mixed with oxygenated products, as oils consisting chiefly of cedrenes ($C_{15}H_{24}$); such as oil of cedar, of cubebs and of cloves. Third, oils consisting chiefly of aromatic aldehyds and allied bodies, such as oil of bitter almonds and of cinnamon. Fourth, oils consisting chiefly of

etheral salts. These may be either (a) oxygen salts, as in wintergreen or (b) sulphur salts, as in oil of mustard and of garlic.

The first division, or terpenes, being allied to the hydrocarbons, are those composed chiefly of hydrogen and carbon. The second division, or cedrenes, mean a volatile liquid hydrocarbon found in the oils of this division. They also possess a camphor which is deposited, the formula of which is $C_{10}H_{16}O$. Thus the benefit of the action of the element oxygen is obtained. You will observe that oil of cloves, one of our most useful agents, belongs to this class. The third division, or those consisting of aromatic aldehyds, mean the presence of aroma in a class of compounds intermediate between alcohols and acids, derived from their corresponding primary alcohols by the oxidation and removal of two atoms of hydrogen, and converted into acids by the addition of an atom of oxygen. Oils of cinnamon and cassia belong to this division. Is not this fact, that they partake largely of the nature of acids, a just explanation of their extremely irritating properties manifested when applied to soft tissue. In the fourth division, or those containing ethereal salts, we find oxygen as one of their elementary constituents, as the formula of ether is $(C_2H_5)O$. The oils of this division that are of sulphur salts, and which are proper to be used in the treatment of these cases, may be employed to excellent advantage after the general debris of the putrefactive process has been thoroughly removed from the canals, as there is evolved from them a product of the sulphur series, which in combination with water forms an excellent bleaching and disinfecting agent.

Whether we are justified in stating, from a purely chemical and scientific standpoint, that special value should be attached to the use of those oils that belong to the oxygen series is a question. I have been unable to demonstrate one point which I had hoped to do, and that is, that the oxygen is liberated from the combination, thus furnishing nascent oxygen for action. However, from a practical and clinical standpoint the special value of this series of oils in the treatment of putrescent pulps can not be denied.

Some two years ago, I obtained a sample of the first lot of synthetic oil of cinnamon received in this country. On experimenting with it in various ways I was much impressed with the activity it exhibited in producing results. This was especially noticeable in its action on soft tissue. Its irritating properties were manifested

in less time and at first in a more vigorous manner than was the case with the natural oils. I then remarked that this difference in action must be due to the fact that it is a made oil, and that the union between the atoms of the various elements of which it is composed is relatively unstable, so that the compound is readily broken up, thus setting free the various elements and enabling them to act independently and more rapidly in producing results. Possibly, in the not-far distant future some of the most available and potent antiseptics, germicides and deodorants may come to us from the laboratory of the chemist in the form of synthetic preparations.

ALUMINUM VERSUS GOLD FOR CLASPS.

BY H. R. NEEPER, D.D.S., HANNIBAL, MO.

Ancient and modern dentistry have used the clasp and various modifications of it for retaining partial dentures in the mouth. The objection to this otherwise useful device is that the teeth embraced are specially prone to decay on the surface covered by it. As this condition occurs in mouths which are given fairly good attention, as well as in those that are more or less neglected, it is clinically demonstrated that these aids should be used only when absolutely essential to the fit or rigidity of the denture. The foregoing applies to gold clasps made to fit closely or to touch at one or two points only at opposite sides of the tooth.

Nine years ago I made some clasps of aluminum, and as they proved satisfactory and were not expensive I used them more frequently. As the years passed I had to put crowns on teeth which had been clasped, or else treat the sensitive places on them with nitrate of silver. In this work it suddenly dawned on me that no aluminum clasp had caused any trouble, nor have I yet seen any bad results from one of this material.

My method of making and attaching is as follows: A model of plaster or fusible metal is secured of the tooth to be clasped; a pattern of thin sheet lead is made exactly as I wish the clasp, and a piece of aluminum plate of desired gauge is cut to pattern. Holes are punched with a fine pointed instrument from what will be the inside of the clasp, which leaves them countersunk to engage the rubber, and they will be found strong enough to stand all ordinary strain. Now fit clasp to model and also to tooth in the mouth. The holes and countersink are filled with wax, placed on the tooth

and brought away in the impression, after which proceed as usual. I have no theories to offer as to the difference in effect on teeth clasped with aluminum or with gold—all I can do is to state the facts, but my experience would seem to offer a fertile field for thought and investigation, and perhaps aid us in remedying this troublesome feature of our work.

THE SCIENCE OF DENTISTRY.

BY F. A. HUNTER, D.D.S., CINCINNATI, O. READ BEFORE THE CINCINNATI ODONTOLOGICAL SOCIETY, OCT. 25, 1900.

If in the reading of this paper I have any difficulty in the pronunciation of my words, or if my enunciation is not so distinct as of old, you must lay it to the fact that I am wearing artificial teeth. The cause of my misfortune is the failure of the science of dentistry—the fact of my being able to wear a plate with a fair degree of comfort is due to the art of dentistry.

There is a tendency in all professions to magnify their own importance, and our own is not exempt from the general rule. I do not wish to belittle the art of dentistry—on the contrary, there is no one who has a higher appreciation of its benefits or a greater regard for the members of this calling, but when we talk of the science of dentistry we lower ourselves to the plane of the medical profession, which is practiced by empiricism and experimentation. What little science we have has been borrowed from our medical confreres, and the reflected light from so limited a source is small indeed. The standard dictionary defines science as "Knowledge gained and verified by exact observation and correct thinking, especially as methodically formulated and arranged in a rational system." With this definition in view I desire to review some articles recently published in one of our scientific journals.

Some months ago the editor of same propounded a question, and it was answered by sixteen of the representative men of the profession. I say representative, because they were nearly all professors in our colleges, and several of them deans of the respective schools. The query was, "Do you believe an oxyphosphate filling in a deep cavity carries danger to the pulp? If so, will you explain how the pulp is destroyed—whether by chemical action, or by the mere juxtaposition of a foreign body? If by chemical action, will you explain what this action is, and how it operates from a mass so

dense as oxyphosphate? If you do not believe that an oxyphosphate filling is dangerous to pulp vitality, can you account for the dead pulps reported upon the theory that the pulp, prior to insertion of filling, was either so diseased or else so closely approached that it would have died under any sort of filling?"

In the answers as published six said "Yes"; seven said "No"; two said "Yes" and "No," or practically said nothing, for the last part of their articles contradicted the first part; one said "Improbable," but acknowledged that he did not know. There was a decided tendency with most of the writers to fill space, but the majority of those who said "No" were short and to the point, one consuming only four lines. Another who said "No" at the beginning of his article used up a page and a half and before finishing practically said "Yes." Nearly all of those who said "Yes" had a string tied to it, and made so many qualifications that their answers were deprived of the value they should have had, coming from such men. They did not give an opinion based upon their own experiences, but the dead pulps they found were always under the fillings of "the other fellow."

Some of the writers spoke of the presence of arsenic in the oxid of zinc, and thought that might account for some of the cases of pulp devitalization. Now, if the powder of the cement contained arsenic in a form and of a potency to be inimical to pulp structure, it would not only destroy some pulps, but would be entirely unfit for use as a filling material—unless you wished to kill all pulps, and that could be accomplished in an easier way. The presence of arsenic in a form dangerous to pulp structure has been shown by experiments not to exist, and even should we doubt the result of these tests, our own clinical experience ought to be sufficient, for we know that pulps do live under oxyphosphate.

Those who answered in the negative were not required by the question to give more than their opinion, that the loss of pulps "reported" would have occurred under any filling; but those who answered in the affirmative were asked to give scientific reasons to support their belief and the reasons given were the greatest mass of twaddle, ignorance and guesswork that has ever been published on a scientific subject. They all speak of the "chemical action of the phosphoric acid" that constitutes the fluid of the compound, but none of them even attempts to explain what that chemical action is.

They all speak learnedly of phosphoric acid as the fluid, probably not knowing that it is a tri-basic compound, and that each form has entirely different properties. One man had such a fear of this acid that he mixed the fluid of the cement with water and oil of cloves before mixing it with the oxid of zinc—a fine chemical combination; but then he says further on in his article, "Unfortunately I know very little about chemistry." It was hardly necessary to make that confession. The height of absurdity was reached by one who started off with a flourish, marched all around Robin Hood's barn, and spoiled four pages in trying to tell what he did not know. He succeeded fairly well, for he contradicted himself twice, and finally concluded by saying—"The bacteriologists must investigate this, so that we may have definite knowledge." The only answer out of the entire lot that had even a smack of scientific investigation was that of a manufacturer of cements, and it is probably due to the fact that he knows something of them.

In order to give these gentlemen and also our members here assembled a chance to criticize me, I will make a few remarks on the above subject. Of course from the question I take it for granted that the pulp is in a normal condition—is not exposed, and is not covered merely by a thin layer of "slush and feathers." Nothing is said in the question about varnishing the cavity, but any dentist in this day and age who would fill a deep-seated cavity with any filling material without previously varnishing is not doing the best he can. Granting that the pulp is normal, my experience has been that oxyphosphate is not only safe and reliable, but necessary as a foundation for the superstructure. The capping of exposed pulps, and the treatment and filling over decalcified dentin, are other things. In my judgment, as a rule the best capping for exposed pulps is arsenious acid, or pressure anesthesia with cocain accompaniment.

The filling over decalcified dentin can be successfully accomplished under certain conditions, namely, where there has been no irritation of the pulp; where the layer of dentin has a leathery consistency and is a layer, not a mass of slush, the easy removal of which would expose the pulp. Then with the use of a saturated solution of bicarbonate of soda, to neutralize the acid condition of decomposition, and next with carbolic acid and hot air to sterilize the aforesaid layer, you can safely varnish, cap with oxyphosphate

and fill. However, you can not sterilize that layer in a minute; it will take time and patience and frequently more than one sitting. The failure to preserve a pulp under these conditions is due more to the inability to render the septum aseptic than to any other cause.

Discussion. Dr. J. S. Cassidy: In regard to chemical relations, etc., how can you observe the chemical action in a spot like the pulp of a tooth? You must theorize on that subject, for experiments made outside do not prove the condition the pulp is in or what the action would be on a live one. There is no doubt that the living pulp would be irritated by phosphoric acid, and irritation produces inflammation on such tissues as the pulp. We do know that pulps die under such fillings, but they might die under any other just as readily as under the oxyphosphate, providing they were as nearly exposed. Pulps die without any filling over them, and in the absence of decay, shock or injury. I am a friend of oxyphosphate and see no use in denouncing same since we all must use it.

Dr. H. A. Smith: It seems rather unjust to criticise these gentlemen who have perhaps not hit the mark, because their effort was all in the line of progress. Lately something has been done in the direction of pure science. I refer to a paper read by Prof. J. Choquet before the International Dental Congress this summer, and Dr. Hunter will take back some of his positive statements if he reads that paper carefully. Varnishing a cavity does no good, and sterilization is not accomplished, for caries still progresses in the layer of dentin over the pulp. No matter how carefully the work is done, the pulp becomes infected in a few years and dies. If this be true at all it explains many cases of irritation of the pulp and its death. Prof. Choquet infected the teeth of living animals with the active agent of caries. After a year he removed the cement fillings and infected teeth out of the mouth from that which had been growing all the time under the filling. If this be true we are as yet a long way from the solution of the difficulty.

Dr. J. R. Callahan: Prof. Choquet's paper is in line with my own observations. During my experiments I have made a great many slides, and have yet to make the first one from a decayed tooth which did not show what seemed to be a dark connection between the pulp-chamber and floor of cavity. It is impossible to know the exact condition of this overlying stratum, for the germ-

product seems to reach almost to the pulp in all cases I have examined. Even with a magnifying-glass you can see in many cases that the tubules are infected clear to the pulp-chamber.

Dr. M. H. Fletcher: My own work in histology has shown that any irritation at the periphery of the dentinal tubules will affect the pulp, and the result in most cases is to stimulate it to build dentin. This work generally so contracts the pulp-chamber that death of the pulp is assured. Where there is a cavity or filling on the outer surface, or any substance there which would irritate the terminal ends of the fibrillae, we always see a zone of affected dentin running to the pulp, and neither oxyphosphate, gold nor amalgam are needed to produce that result. Of course the susceptibility of different pulps varies. In a few cases the tooth-crowns are decayed almost away, yet the pulp will live something like a fungus growth. These are very rare, however, so the whole question rests upon the vitality that may be in an individual pulp, or the power it has to maintain its existence against all encroachments. In view of all this I do not believe that cement fillings cause any more trouble than other fillings or other irritants.

Dr. O. N. Heise: I agree that men should not make positive statements about subjects when in fact their knowledge is based upon guesswork. The philosopher was right when he said: "What we are said to observe is usually a compound result, of which one-tenth may be observation and nine-tenths inference." I can not, however, agree with all of Dr. Hunter's remarks about the science of dentistry. His loss of teeth was not due to the failure of dental science but to the lack of proper understanding and application of it. The very art upon which he lays so much stress is dependent upon the science of chemistry and metallurgy. Again, the work of Black, Miller and Williams is surely scientific, and the names of many other men might be enumerated who have made a scientific application of the knowledge of anatomy, bacteriology, etc., to the practice of our profession.

PRESSURE ANESTHESIA.

BY W. J. HIGGINS, D.D.S., TRAVERSE CITY, MICH. READ BEFORE MICHIGAN STATE DENTAL ASSOCIATION, AT KALAMAZOO, JUNE 11-13, 1900.

Since last November I have used only this method of anesthetizing pulps, and have found it equally available in incisors, bicusps and

molars. In every case I have met with success in removing the pulp and filling the roots immediately. My method is as follows: After adjusting the dam I locate the exposure, or if there be none, I expose the pulp as carefully as possible. It is not necessary to have a bleeding pulp, but in cases where it can be done without much pain I cause a slight flow of blood. Then place a few pure cocain crystals on a glass slab and add enough water to make a saturated solution. Next saturate a small pledget of cotton with the solution and apply to exposure. Now take vulcanite rubber of a size that will fit into the cavity snugly, and by light and slow pressure on this with a burnisher the pulp will be gradually anesthetized. When there is no response to hard pressure the vulcanite and cotton are removed and the pulp extracted. Often there is bleeding, but it can be quickly stopped by hydrogen dioxid. Then I dry the cavity thoroughly, seldom using anything of a sedative or antiseptic nature, fill the roots and insert the filling or adjust the crown without fear of future annoyance. There may be slight tenderness for a day or two in a tooth treated as above, but the liability is not so great as where arsenic has been applied.

Discussion. *Dr. B. H. Lee:* This is not a good method to use in all cases, for the pulp tissue cannot be gotten out of the smaller canals in bicuspsids and molars without much pain, as it seems impossible to anesthetize these fine nerve filaments. The operation is, however, very good for the anterior teeth.

The name "Pressure Anesthesia" will bear criticism, as it is not the pressure which causes anesthesia, but the infiltration of cocain into the tissues. I have tried pressure alone on several exposed pulps, but it always failed to anesthetize. Dr. Schleich combines pressure with the solution which is injected into the tissue. He marks out the area to be operated upon and inserts the needle, filling the tissue with liquid. This seems to be the same idea upon which our practice is based, and we should therefore call ours likewise infiltration.

Dr. J. H. Stofflet: I saw a case recently where the pulp had been extracted with pressure anesthesia and the tooth dropped out three months later. I would ask if anyone can explain this, or if any have similar experiences to report.

Dr. P. F. Hines: A combination of this method with another idea works admirably. First anesthetize the outer surface of pulp

with pressure and then inject with the needle. This gives much better, less painful and quicker results than does either method alone.

[EDITOR: In the September, 1900, *International* was an article on the above subject by Dr. Wilson Zerfing of Philadelphia, read before the Philadelphia Academy of Stomatology, April 24, 1900. He commenced by using formalin, one part; absolute alcohol, five parts; and pulverized cocain crystals, taken up with a piece of spunk saturated with the solution, and just the size of opening of exposure. Later, it was determined to use alcohol alone with the cocain, and the result proved quite as successful as when formalin was added. The author was greatly pleased with the treatment, but also described a later method which he had been employing. A very fine hypodermic needle was placed upon the exposed tissue and a drop of chloroform forced on it, immediately after which the needle point was driven into the tissue, together with additional chloroform. In this way the needle may be entered with almost no pain and after a little more chloroform has been injected the pulp can be removed without sensation. In the November number of same journal is the discussion upon this paper, and we give the salient points of same below.]

Dr. Louis Jack: I either instil cocain or use cataphoresis. With the former the dam is applied and cavity filled with a saturated solution of cocain. In a few minutes I am able to insert the broach and continue instillation to the apex of canal and remove the pulp. Where patients are from out of town or live at a distance the old method of using arsenic wastes entirely too much of their time. In a few cases, however, I have first devitalized a portion of the pulp with one application of arsenic, and desensitized the remainder by instillation.

In most cases I prefer cataphoresis, which occupies perhaps fifteen minutes in desensitizing the entire pulp. In one case recently the pulps were not exposed, but the teeth had been abraded nearly to the gum. In one the resistance to current was so great that only one-fortieth of a milliampere was passing. The surface of dentin was so dense, because of abrasion, that after trying to introduce the cocain I had to drill some little distance below the surface and recommence the cataphoresis. However, it took only eighteen minutes to deaden and remove the pulp. Where the pulp is not anes-

thetized clear to apex of root the remaining portion can be anesthetized by instillation.

Dr. Joseph Head: Arsenic has never proved satisfactory in my hands, so I have adopted the following method—I drill into the tooth as far as possible without giving too much pain, and then fit the nozzle of hypodermic syringe into this opening by means of a packing of rubber-dam, so that when I inject the solution full pressure can be obtained. When the patient is under nitrous oxid gas I drill through into the pulp-chamber and inject one to two minims of a ten to fifteen per cent cocain solution, and when he recovers consciousness the pulp is usually insensible. Then I make another injection to be sure of anesthesia and remove the pulp. Cocain is inactive for certain people. I have injected it into the pulp with pressure and that organ has remained absolutely unaffected, although the patient has had some slight systemic effects from the cocain, showing conclusively that it entered the tissue.

Dr. A. N. Gaylord: I sharpen the point of my hypodermic needle as finely as possible with a sandpaper disk and take off part of the bevel, so that the point need not be inserted deeply under pulp before the hole can be embedded, and the solution go directly into the pulp. I find that cocain will penetrate the pulp much more easily than it will gum tissue. The solution used is one published somewhere and consists of cocain, ten grains; carbolic acid, ten grains; atropia, one-fifth grain; ten minims of a one per cent nitroglycerin solution; water, two ounces. With this I have never yet had any ill-effect, either sloughing, paroxysms, or heart trouble, although I have always employed it where necessary to use cocain.

Dr. H. C. Register: I use four solutions—one with alcohol, one with chloroform, one with alcohol and chloroform, and one with fifty per cent solution of sulphuric acid. Cocain mixes with all of these readily, and with the last named it is one of the best things I know of for desensitizing hypersensitive dentin, but the acid and its effects should be removed before filling. In some cases I have used successfully a seventy-five per cent solution of nitrate of silver, holding it against the exposed portions for a few seconds. It is a strong coagulant and will enter the pulp some distance, when you can insert cocain hypodermically.

Dr. T. V. Smith: Age cuts quite a figure in this work. In

patients from twelve to fifteen years old the pressure seems to cause more pain, and in one case I could not obtain anesthesia. Arsenic was therefore used, and on opening into the pulp I found the entrance to apical foramen quite large and considerable blood present. Beyond seventeen there seems to be little sensation either upon pressure or upon removal of pulp. A good exposure must be obtained, all blood be cleared away, and no hemorrhage allowed while the operation is in progress.

Dr. W. H. Trueman: I have seen cases where the pulps have been removed under gas, under cataphoresis and by means of other methods, and the teeth have never been comfortable afterwards, in some instances giving so much pain that they had to be extracted. There was no apparent reason for this and I think more experimentation is necessary before we can decide upon a universal method. The question is, is it better to extirpate a live pulp wholly or partially anesthetized, or one that has been devitalized and has severed its connection with the surrounding tissues? Is the danger of the devitalizing agent passing beyond the apex of root greater than that caused by leaving some portions of the tissue in the pulp-cavity, owing to the impossibility of thoroughly removing from it a pulp that still retains its normal connection with normal tissue? It is generally conceded that the pulp is not a mere occupant of the pulp-chamber, but that it is intimately connected with the tubules and apical tissues, and that upon devitalization these connections are severed and it is possible to thoroughly remove the pulp. Now can we do it when the pulp is in a normal condition?

Dr. M. I. Schamberg: Is the anesthesia due to cocain or to pressure? At first the application of cocain may allow a certain amount of pressure, but if you press upon a vascular part, enclosed in a bony cavity, you will impede the circulation, and I doubt if any cocain is absorbed after pressure has once been applied. After that the anesthesia is due to temporary paralysis of the nerves which permits extraction of pulp. Sufficient cocain can not be taken up by the pulp to thoroughly anesthetize it by simple contact. Pressure anesthesia is better than injection of cocain or application of arsenic, because there is little danger of anything being forced beyond the apex.

Dr. Zerfing: All of my failures have been in young patients, and I have not found that advanced age militates against the suc-

cess of treatment. The time required varies from half a minute to ten minutes in either anterior or posterior teeth, but the average time for anterior ones is from two to three minutes.

HEREDITY—Prof. Arthur Thompson's lecture on "Heredity" at the Royal Institution of Great Britain was an able and lucid exposition of an exceedingly difficult subject. Three kinds of inheritance were distinguished: (1) Blended, in which the character of the two parents in regard to a particular structure, e. g., the color of the hair, is intimately combined in the offspring. The form is well seen in hybrids and is probably the most frequent mode of inheritance. (2) Exclusive, in which the character of one parent is suppressed in regard to a structure, e. g., eye-color. (3) Particulate, in which part of a given character is wholly paternal and part wholly maternal. Suppose the parents of a foal to be light and dark. If the foal is piebald the inheritance is particulate. Inheritance is not dual but multiple. A man, says Mr. Pearson, "is the product of all his past ancestry, and unless very careful selection has taken place the mean of that ancestry is probably not far from that of the general population. In the tenth generation he has theoretically 1,024 tenth great-grandparents. It is the heavy weight of this mediocre ancestry which causes the son of an exceptional father to regress toward the general population mean." The transmissibility of acquired characters was considered not to have been established, but if the effects of "nurture" could not be entailed on the offspring, it was all the more important to secure for them good "nurture."

POWER OF THE EYE.—"We often hear," writes H. M. Stanley, "people say that they can merely by a steady gaze affect a person at a distance, who is not looking at them, and some say that they are able to make one sitting in front turn the head in this way. Mr. Bell in his 'Tangweera' mentions this feeling when he says: 'Presently I felt as if some one was looking at me, and raising my head I saw a large puma standing ten yards away.' To the physiologist it may seem uncalled for to investigate a manifest absurdity, but it has at least a practical value to explode a common error by direct experiment. I asked a young man, who is very confident of his powers, to stand unknown to reagent A behind a bookcase and look through a carefully concealed peep hole. I gave him the best opportunity, placing A about four feet from the hole directly facing him, and I engaged A in mechanical writing. To the young man's confessed disgust and irritation he was unable to disturb A. My few experiments were negative in results. However, it may be that telepathic influence is exerted under certain conditions, and experiments with twins and others constantly *en rapport*, especially when under emotional stress and at critical junctures, might be worth trying. If there is nervous telepathy, this is perhaps as simple and common a form as any. If disturbance arose subconsciously the test would be that the tracings from an instrument, to show nervous conditions, should show large fluctuations coincidently with the times when the agent regards himself as successful."—*Med. Rec.*

Digests.

TEETH OF CANDIDATES FOR THE METHODIST MINISTRY. The spirit of the age was quite apparent in the discussion which took place at the Wesleyan Methodist Conference. A proposal had been sent by the committee, which was based on the advice of the medical men who examined into the state of health and condition of body of the candidates, to the effect that each candidate, before presenting himself for examination, should take care to have his teeth put in proper order. The doctors further said that they could not take the responsibility of recommending many of the men for foreign service unless this were absolutely insisted upon. This is a most wise suggestion on the part of the medical officers, and one we hope they will not allow to be forgotten. It is only surprising that it has not been made before. Men volunteer as foreign missionaries, which means that they are prepared to devote themselves to a most laborious and harassing life, and it is only common sense that their bodies shall be in such a state as, under all ordinary circumstances, will resist disease, the exhaustion of labor and mental worry; and, as a rule, they try to render themselves as fit as it is possible for them to be. Under these circumstances, is it not strange that the teeth—the seat of the most wearying pain a man ordinarily suffers, the guardians of the stomach and digestive organs—should be partially if not entirely neglected? We have seen how our soldiers in Afghanistan, and lately in the Transvaal, and the American troops in Cuba, were rendered ineffective through toothache and kindred troubles; and we can imagine the wretched plight of a poor missionary, miles away from dental aid, groaning out his desire for death or an earthquake, because he was allowed to go to his duties with defective teeth. We hope this new departure of the Wesleyan Conference will commend itself to other missionary bodies who may be acting in ignorance of the dangers, both to body and soul, their missionaries may be running from neglect of a simple and obvious precaution.—*Brit. Med. Jour.*

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SENSITIVENESS OF DENTIN. By Alfred Gysi, Zurich. Read before the International Dental Congress, at Paris, August, 1900. The author allies himself with those who hold that the den-

tinal canalicules do not contain either nerves or fibres fulfilling nervous function (comparable to the roots of the retinae, etc.) The contents of the canals, of which there is such an extensive network of branches in the dentin, he considers serve only the purpose of maintaining the organic fundamental substance of the tooth in a condition of vitality and elasticity.

"The sensitiveness of dentin," says Dr. Gysi, "is only of a secondary nature, and is not physiologic. The physiological sensibility of dentin is sufficiently provided for by the pulpa and the periosteum, so that the supply of nerves in dentin would be superfluous. If the dentinal canalicules contained nerves, the progress of caries would be painful, which is not the case so long as the pulp is not attacked."

That dentin is, nevertheless, highly sensitive is an undeniable fact which he explains in the following manner: (1) No one has yet succeeded in proving that the contents of the dentinal canalicules consist of nervous substance. (2) All we know is that the dentinal canalicules are filled with a watery organic substance which existed in the developing tooth long before a trace of nervous fibres could be found in the dental pulpa. Consequently these nervous fibres would have to displace the already existing dentinal fibres and grow into the dentin in their stead, which is highly improbable. (3) It has been shown that only on the inner boundary of the dentin around the odontoblasts there exists an abundant network of the finest nerve fibres. (4) From physics we know that water is a practically incompressible substance (to speak exactly, water is compressible only to the extent of 1-millionth part of its volume). To illustrate this by an example: the aqueous content of a rigid tube one meter in length can be compressed only to the extent of 1-thousandth of a millimeter. Consequently the aqueous content behaves as an extremely rigid substance. In the case of a tube open at both ends and full of water, pressure exerted at one end would thus be quite directly transmitted to the other end, and that with undiminished strength.

From these premises I argue as follows: A pressure or a drawing exercised upon the aqueous content of a dentinal canalicule that opens into a carious cavity is directly transmitted to the other end of the dentinal canalicule, where it is loosely closed by the odontoblasts, and then the odontoblasts which are abundantly interwoven with nerves feel the pressure or drawing as a sensation of pain.

Pressure is exercised generally only by the excavating instruments, and that especially when they are blunt and are directed against instead of away from the dentinal tubes. Drawing is chiefly exercised when hygroscopic substances, or such as have an affinity or thirst for water, such as salt, sugar, alcohol, etc., are introduced into a carious cavity, inasmuch as they greedily attract the aqueous contents of the dentinal canaliculi to themselves. For this reason almost all so-called dentinal anesthetics cause the patient more pain than they save. If, on the other hand, the aqueous contents of the tubules are dried up over a greater or less region, then pressure can be exercised only on an extremely elastic column of air, and is therefore not so violently nor so suddenly transmitted to the fluid contents found further inwards and by these to the odontoblasts.

I would therefore suggest that only the odontoblasts, or the nerves immediately surrounding them, feel external influences, while the dentinal fibres themselves do not. For even with the aid of cataphoresis dentinal anesthesia does not succeed until the cocain has penetrated to the odontoblasts, which can be demonstrated by the use of anilin blue solution of cocain.

When, however, the external portion of the contents of the tubuli is caused to coagulate through the introduction of substances to coagulate albumen, such as carbolic acid, formol, sublimate, etc., and thereby loses its mobility, then also the great sensibility disappears. But since even a thin stratum of the coagulated contents of a tubule offers considerable resistance to the further penetration of the coagulating agent, it would probably be impossible, in a time sufficiently short to be practicable (2 to 5 minutes), to cause the coagulation of a sufficiently deep layer. If, however, one makes a so-called inlay which has several days' time in which to act, then it is possible to save the patient much pain when excavating. It would therefore be a serviceable task to discover an albumen-coagulating agent which would work slowly, and consequently painlessly, that would not discolor the tooth, and not exercise any injurious effect on the pulp.—*Brit. Jour. D. S., Oct. 1900.*

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OXID OF ZINC AND EUGENOL AS A COVERING TO PULPS. By S. B. Luckie, D.D.S., Chester, Pa. Read before N. Y. Institute of Stomatology, May 1, 1900. That which makes the mixture of oxid of zinc and eugenol of value is that it possesses

the properties of a good protector to the pulp, a therapeutic agent and a filling-material combined, and can be used as either one or all, if desirable, in the same case. It makes a good covering for arsenious acid, as it can from the peripheries of the cavity be domed over the application, thus avoiding pressure, and being a soothing obtundent, it adds to the possibility of lessening or preventing the pain so likely to follow arsenical dressings.

The evidence of its having therapeutic properties comes from clinical observation alone. Teeth that have ached from pulpitis, after having the pain relieved, if filled with it will often remain comfortable for months, extending into years in some cases. Eugenol, as given by Merck, is antiseptic, antitubercular, and a local anesthetic. Oxid of zinc is a tonic, antispasmodic, and astringent; in general medicine it is used as an exsiccant on excoriated surfaces, either by sprinkling or in the form of an ointment. What therapeutic advantage, other than to make a mechanical agent to protect from external irritation, is gained by mixing the two drugs I have not been able to find out. If, however, the properties of each be retained after the mixture is made, it is hard to conceive of more desirable properties for a lining or as an intermediary in deep cavities.

While its virtues are many, I do not wish it understood that they are extolled to the same degree as is done for proprietary cements for pulp-covering and dressing; it will not in all cases maintain comfort in all the stages of pulpitis, nor does it do away with all pulp devitalization and extirpation, but in the hands of the careful and conscientious practitioner it will aid in giving comfort after filling in those cases of sensitive dentin and of deep-seated caries, and very greatly reduce the number of cases of pulpitis and pericementitis that occur in filled teeth. It can be used to fill deciduous teeth where it would not be wise to prepare the cavity for a metal filling, and is often preferable to gutta-percha, as its use is more possible to maintain comfort and prevent pulp and peridental complications. It makes a good trial filling where caries has approached very near the pulp, and if no complications follow, when worn away it can be covered with amalgam or gold.

In those teeth where the pulps have died under a filling of oxid of zinc and eugenol, the first case is yet to be presented with the pulp putrescent and foul smelling, as the contents of the chamber and canals are always dry, and there is no exhibition of peridental

irritation. Of course, it is to be understood these were cases seen before the filling had wasted sufficiently to allow the fluids of the mouth to enter pulp-chamber.

As an intermediary under zinc phosphate fillings it will prevent the phosphoric acid from irritating the pulp. In all cavities of much depth on the occlusal surfaces of bicuspid and molars it should precede the filling, and in approximal cavities a pad of it should be placed on the region overlying the pulp, the mix being made quite thick to hasten the setting, and the cavity walls be covered with a quick-drying lining and filled with whatever material is designated.

To enumerate, the cement made from oxid of zinc and eugenol is useful to fill cavities with extremely sensitive dentin for a period of time elapsing from a few weeks to months, as a trial filling, as an intermediary in deep cavities, as a covering for pulp and canal-dressings, and as a non-removable canal-filling. As a canal-filling it can be used with advantage on account of its slow setting, allowing more than ample time for its introduction. The method adopted for canal-filling is to pump it in with Swiss broaches until all possible parts of the canal are apparently reached by it, when a cone of temporary stopping is placed in the canal and pressure made towards the apex.

With an experience of about six years it has been a valuable aid in the treatment of teeth and in preventing the discomfort from thermal changes that so often follow their filling. I am not unconscious, however, that it might be improved by the addition of other antiseptics; indeed, it has often occurred that a series of bacteriological experiments might be conducted with advantage to prove the value of different intermediary used between filling and dentin, or as pulp caps. Aristol or hydronaphthol can be mixed with oxid of zinc in equal quantity, and if mixed with eugenol a cement with about the same degree of hardness is obtained, though clinically I obtained no advantage from the addition.—*International, Oct. 1900.*

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RIGGS' DISEASE AND GENERAL PRACTICE. By Howard T. Stewart, D.D.S., Greenville, Miss. I prefer the term "Riggs' Disease," as nothing else has ever proved satisfactory. This at least covers all phases of whatever trouble it is that causes bone to absorb, gums to recede, and teeth to loosen. For years I observed that the teeth which were scraped most under the gums

yielded most readily to treatment. When it was necessary to wound the gum severely and tear up the pericementum in order to get away real or supposed tartar, I noted that much better results were obtained than where little scraping was necessary. This of itself was startling, as I had always been taught to wound the gum as little as possible and preserve the pericementum as nearly intact as was consistent with removal of the tartar. I also noted that the application of medicines where no tartar was present accomplished nothing, except to allay the inflammation a short time. I began to wonder how this could be. When we unwittingly produced great irritation and inflammation in the tissues we were trying to heal, why should we obtain better results than when violent inflammation was not present? I noted too, that nearly every writer on this trouble advocated the *absolute removal of all tartar—the thorough cleansing of the root*—and I wondered if the removal of the tartar alone produced the results which the writers claimed; or was it the unwitting removal of dying cementum and bone and the production of new tissue by the violent inflammation thus excited? Men produced partial results in this way, having no idea why they got the results. They were rarely permanent, because it was an accident if the operation was thoroughly done, the operator having in his mind only the removal of tartar.

At all stages of the disease the treatment is essentially as follows: Entire mouth is rinsed thoroughly with permanganate of potash, half grain to the ounce, and the gum about tooth to be operated on is wiped thoroughly with cloth saturated with the solution, to get surroundings in aseptic condition. The part is now protected from the saliva with napkin. The napkins are three and four inches square and are torn from soft domestic. Two or three can be rolled together when necessary. They are, of course, thrown away after use. The gum is now touched on either side of the tooth, where the needle is to enter, with a little carbolic acid, and into the gum is injected a five per cent solution of eucain. When the gum is no longer sensitive, a thin lancet, three-edged and flexible, is carried quickly down from the gum margin to the alveolar process, and holding it closely to the side of the tooth is passed around the tooth, thus severing the gum entirely from it.

Now comes the difficult part of the operation, though it seems simple enough. A small but strong scraper or chisel is used to

scrape away not only the diseased pericementum, but to remove the external layer of the cementum itself, which the microscope shows to be always hypercalcified to the partial or entire obliteration of the lacunae and canaliculi, thus shutting off the circulation. We also remove diseased portion of the alveolar process. The success of the treatment depends on the thoroughness with which this operation is performed. It can not be well done at a first trial—it requires skill and practice. Patients are usually horrified at the description of the operation, but there is usually little pain attending it when the eucain is thoroughly applied.

Now the pocket is washed out and *wiped* out with a little cotton wrapped on a stiff broach. Then the mouth is protected with napkins, and sulfuric acid, *full strength*, is carried to the bottom of the pocket. As the blood oozes out, bringing the acid with it, it is wiped away and the root again flooded with the acid. This is repeated many times, the object being to hold the acid in contact with the root long enough to decalcify the surface of the cementum, which thus affords a better attachment for new tissues.

I have never found the acid to injure the enamel enough for that point to be considered, and I pay no attention to it whatever, except to have patient rinse mouth with soda solution after the operation is completed. A mouth-wash of permanganate of potash, quarter grain to ounce, is prescribed to be used hourly until gum heals.

The most stubborn cases are those where we find no tartar whatever. From these we usually find a very free flow of pus, and the operation alone will not always cure it. The patient in whose mouth this particular phase of the disease exists is usually of scrofulous tendency, and my first move with them is to prescribe a dose of Epsom salts each day for three weeks. This simple remedy has a very happy effect on a stubborn carbuncle, and has equally as happy an effect on these stubborn teeth. In addition to the salts sarsaparilla and potassium iodid are to be taken three times a day.

I can not pass over this subject without emphasizing the importance of devitalizing the pulp in all advanced stages. I do not mean by this to wait until the tooth seems ready to drop from its socket. When the pericementum is one-third gone I should devitalize without hesitation. I would also emphasize the importance of cutting off all teeth in the *very* advanced stages, leaving only a little of the tooth above the gum.

The whole tooth obtains its nourishment through the little bit of pericementum that is left, and if the main part of the tooth is cut off the vitality that before sustained the whole tooth is confined in the very little that is left. These roots are to be crowned, and when possible the crowns soldered together for mutual support. I formerly advocated banding these loose teeth together, but I no longer adhere to this practice, but cut such teeth off at once, crown, and solder the crowns together. These, of course, are cemented on only after the roots have been scraped and decalcified.

I would not claim to cure *all* teeth affected with this disease. When they have lost all bony attachment and are held in place only by the gum, it is folly to expect to make them useful. Neither would I advise that teeth be retained which are so loose that they can never be made firm and comfortable again, even though the disease could be eradicated, when the teeth on either side of them are firm and would support a bridge. For instance, if the lower incisors are so loose that they can be pushed about with the tongue, it would be absurd to retain these teeth when they might be extracted, the cuspids cut off and a bridge be inserted, which would be of real biting use to the patient. If these cuspids are not very loose they will support the bridge admirably and grow firm after treatment.

I am often asked if the strain of a bridge inserted on loose teeth will not aggravate the disease and cause loss of the teeth. My experience is that the bridge-work, when constructed with special reference to these loose teeth, tends to tighten them, and does much to eradicate the disease. The teeth are held rigid and are mutually supporting. When you stop the motion of a Riggs'-disease tooth in its socket you have done much for its cure. It is really astonishing to see how firmly a few loose roots will support a bridge, and especially a *large* bridge. Only a short time since a mouth was presented that at first glance seemed hopeless; nearly all the teeth in the lower arch were in the last stages, all seeming to be held in it by merely a ligamentous tissue, and most of them exposed nearly to the apex. On close examination I found the two bicuspids and the cuspid on each side to be fairly firm in their sockets. There was no hope whatever for the molars or incisors, so they were extracted at once, thus leaving three adjoining teeth on either side. These were devitalized, the roots scraped and crowns excised. A full lower bridge was then placed in position. This at first glance may

seem to be a frail support for so large a piece, but a moment's consideration will show us that one side helps support the other, and that the strain of mastication at every point on this bridge is amply sustained by the supports.

Our hardest teeth to manage are the molars. To thoroughly scrape all surfaces of the roots of molars is an operation that not one operator in a thousand accomplishes usually. On the superior molars I have found a bur of the greatest service in breaking up the diseased tissue. When the disease has progressed to a very considerable extent in a lower molar the only effective way to treat that tooth is to devitalize, cut off the crown nearly to the bifurcation of the root, and separate the roots with a drill. This gives us thorough access to the roots, and it is well nigh impossible to thoroughly scrape these roots unless the crown is removed. Of course this is heroic, but if the tooth can be saved no other way, why hesitate to cut off the crown, when otherwise in a short time the entire tooth would have to be extracted?

When the gum heals a separate cap is fitted to each root, these caps soldered together and rounded out to proper shape, cemented on, and an ordinary shell cap fitted over them. All this involves a vast amount of labor for one tooth, but not so much as a three-tooth bridge, which would be the only satisfactory way of replacement should it be extracted. This, of course, should be thoroughly explained to the patient, and a fee charged corresponding to the time consumed.

Oftentimes we find the posterior root has entirely lost its bony attachments, while the anterior root is quite firm. In this case the posterior root is extracted. A cap is fitted to the remaining root like the cap of a Richmond crown, but without the pin. A solid gold lining is now soldered above it and to a gold crown fitting over the tooth, either behind or in front of it. In other words, this is simply a bridge of two teeth, one end supported by this anterior root and the other by an adjoining tooth. This, also, is better than making a bridge of three teeth, as it saves the mutilation of one tooth.

The greatest objection to this work is the amount of time consumed and the great expense attached. Large operations can be done only for patients who can spare a good deal of time and money, and who appreciate the difficulties to be encountered. The time consumed is so long and the difficulties so great that it is hardly in

this respect to be compared with any other dental operation; and for this reason the fees which are necessary to remunerate the dentist for the nervous strain and consumption of time are, compared with most dental operations, simply enormous. Take a tooth which it is necessary to cut off even with the gum and crown. We have first to destroy and extract the pulp. Next we have to operate for the Riggs' disease and treat. Then, after all this, which takes much time, we have to construct and place a crown. Suppose we adopt the charge of leading dentists—twenty-five dollars for each crown. Suppose they charge the same for extracting the pulp and curing the Riggs' disease; we have then a tooth costing fifty dollars. This seems like an immense fee—and it is! But the charge is not large when we consider that in the time consumed in this treatment and insertion of crown these dentists could easily make \$100 filling teeth at their regular rates.—*Headlight, July—Clippings, Sept. 1900.*

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PERFECT LIGHT FOR OPERATING. By Dr. C. B. Colson. Read before South Carolina Dental Association, July, 1900. The one single idea I have ever heard on this subject is to get a north light, and that seems to be about all there is extant on the subject. Placing a dental chair before any hole in the wall before a north light is positively not all there is for us to consider in the problem of light, a subject very important and which becomes more serious each year, for it is important for us to preserve our sight in our primer days if we hope to have any when we are older. Without other consideration, a north light is not able to preserve the sight nor will it allow us to perform perfect operations about delicate enamel borders.

There are to-day dental chairs placed before glazed openings in the wall with light from all thirty-two points of the compass. Many are placed without any consideration as to direction of light, some with direct rays all morning, all the afternoon and in the gloaming. Some placed facing within a few feet of a high dead-wall, some before narrow slits for windows atrociously glazed with various colored glasses, some prismatic and displaying all over the dental outfit and patient the split-up rays in beautiful and blinding prismatic colors of the rainbow. It may also be possible that the owners of such placed dental chairs are able to do some very nice dental operations; but with better light and conditions they would do better,

and with their eyesight unimpaired, for I am confident that many are driven to glasses prematurely by defective light causing eye-strain.

How should a dental chair be placed, and how should the light be properly directed to the chair? The north light is preferred, not only by the dentist, but by the artist, photographer and engraver because this light has its source farthest from the sun. It is steady in its intensity, because the floating clouds that pass over in the day pass from south to north and do not shadow or affect this reflected light from the north as they do the direct ray of the sun, and as does a cloud after passing the zenith, will reflect back the sun's ray from its southern, western and southeastern border.

A too bright ray from any source or any sudden change of intensity is very injurious to the eye. The engraver, who does the most perfect eye-work of all the artists, protects his eyes and cheeks against these bright rays by working behind a thin, white tissue-paper screen placed closely before him. The photographer has his studio with many screens and curtains over his skylights, that the artificial optical eye can see perfectly the outlines of each object, and the rays are softened and not split into prismatic light. The painter and the artist have many various schemes for light for their work and the saving of their sight.

The north light is by no means absolutely essential for a dentist; while I admit it is the best to secure, there are many points of the compass where a fine light for all dental purposes can be found, and if the proper care in securing and focusing this light is taken it will answer even better than an unlimited north light.

The true angle of light that reaches a dental chair should be near 45 degrees in front and slightly to the left. I say 45 degrees because the greater volume of light is needed from about that angle. The highest source should not be higher than 22.30 or $22\frac{1}{2}$ degrees from the zenith. To be more explicit to those who may not comprehend these figures, I will say that the rays of light must not come from overhead, but best from that point of the arc of a circle half way between the angle of 45 degrees and the zenith, which is directly overhead. For operation on the lower teeth this is the light to use, and it would be well if all other light below the angle of 45 degrees should be subdued by a translucent screen of some kind. The reason here explained is, that if the light extends overhead or beyond and down below the angle of the mouth to the window it

will cause a half shadow, whereas if these direct rays are intersected there will be no shadow, made by the upper maxilla and lips while working on the lower, or shadow from the lower lip and jaw while working on the upper teeth.

To those using transoms or skylights this idea is important: Not to extend the transom to the point directly above the chair, but have its highest point stop at the angle known as $22\frac{1}{2}$ or half-way between the angle of 45 degrees and the zenith.

The lowest source of light should never be below the mouth of the patient and the most satisfactory will be from at least two feet above the horizontal from the patient's mouth. All that part of the window below this line should be screened with some translucent material that will not allow a ray of light to pass through that can catch the eye. The most pleasing color for such a screen, after several experiments, I find to be Indian red. The reason for this is a known fact in physics that light passing through a red medium does not ray off, with refractions to confuse or worry the eye. This screen should be even and smooth, entirely across the window, and have no apertures to allow confusing little rays to pass. The usual custom of placing lace across the window is all wrong and must do harm.

There should never be a light or bright object to the left of chair, as there is an immense injury done by such light to the eye when operating. The light reflected from a bright spittoon or glass of water placed on the left of a chair will cause much eye-strain in doing delicate work, such as trimming marginal borders or placing gold. My cuspidor is dull. I have also found that a light directly back of a chair is also very hurtful and annoying.

I have long experimented as to whether a chair should be placed directly in the center before a window. The result of my experience is, that I have mine slightly to the right, overlapping to the right of window a few inches. The right upright of the window on a line with the patient's cheek, there being no light behind me nor my hands on the right, but with the large volume coming from the left of my hands, therefore does not shadow within the mouth, or my person when I am forced to a position slightly in front.

To perfect my light I have run from the top of the window back over the chair a white Holland shade that reflects down most excellently all light on the chair. Along the sides of the window, which

are recessed, I have placed at acute angles two narrow white Holland shades about eighteen inches wide. These reflect all lateral rays of light, that would otherwise be lost or absorbed, also to the chair. The lower two feet of my window is screened. I am always, even in the darkest cloudy day, in a perfect sheen of light; during certain portions of the day, for about two hours, the sun obliquely gets within the window. To get rid of this severe ray I have another roller-shade that I pull down the entire length of the window and get a most excellent result, in fact, a light that I do my best operating with, as it is simply perfect. There is something in the soft light that passes through a white Holland shade that is most pleasing to the eye. It is the same light that engravers use.

No man's eyes are perfect and the same every day. There are days when many of you feel that your eyes are not at their best. Every now and then of a morning I feel while operating that I am not getting so perfect a view of a margin as I should. I have long since learned the cause: acid stomach—my morning coffee has fermented—and I immediately take an effervescent saline draught, which corrects the sight and stomach. This draught is deep-rock, vichy or a half-teaspoonful of bromo-seltzer.—*Dental Hints.*

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ANTISEPTIC SURGERY OF THE MOUTH AND FACE.
By W. H. G. Logan, D.D.S., Chicago. Read before National Dental Association, July 10, 1900. Let us first take under consideration the steps necessary to gain and maintain an aseptic wound about the face. The part needing surgical interference should be first shaved, then scrubbed with a stiff nail-brush and green soap; then cleansed with a two per cent carbolic acid solution, and lastly bathed freely with absolute alcohol; the patient being previously anesthetized and hair so bandaged that the surgeon can not get his fingers or instruments in contact with the part, and as a result infect the wound. If during the operation the patient vomits, the wound and the field about should at once be covered with gauze, which is not removed until the parts beyond the surgical field have been made aseptic again. Nausea subsiding, the protecting gauze is removed and operation finished. The wound is irrigated with a one per cent carbolic acid solution, and followed by a saturated solution of boracic acid; care is taken that all free pieces of tissue, bits of cotton or tents of gauze are carried away during the process of irri-

gation. Hemorrhage in this field can as a rule be best controlled by torsion. In case this fails ligate with catgut. Never use a powdered styptic to control hemorrhage which occurs in an aseptic wound; it will prevent union in the parts by first intention. The employment of tampons passed from boiling water to the wound will control the hemorrhage you have occasion to treat about the mouth and face very satisfactorily in a majority of cases, with the pleasant after-result of but slight wound inflammation. You may now close the wound by the employment of horsehair or silk and catgut sutures, the catgut only to be employed where the wound is very deep. I do not believe it wise to rely upon buried sutures alone in the treatment of wounds about the face, but always use a few horsehair or silk sutures to insure constant coaptation of the edges. Care must be taken that these sutures are not drawn too tight, for the result will be stitch abscesses.

Let us now pass to the dressing of this aseptic wound of the face. Questions of importance are, Should it be a moist or dry dressing? How secured to the part? and period of time dressing is to be employed? Answers: A dry dressing, and secured to the part by the use of flexible collodion to the dried tissue. This dressing is kept in position from five to twelve days, dependent upon the tension about the wound. To prepare the surgical field for its dressing after the sutures are in position, dry the parts and dust thickly over the sutured line with powdered boracic acid, which is then moistened with alcohol. The powdered boracic acid will, as the alcohol evaporates, practically hermetically seal the exposed edges of our aseptic wound. Now place a few layers of gauze, to be held secure by bandaging where the part will allow. More frequently, however, it will be found necessary to place a fold of absorbent cotton over the layers of gauze, and secure this to the dried tissue by the means of flexible collodion and adhesive plaster strips. The dressing is not to be disturbed without good cause until the stitches are to be removed, which is from fifth to eighth day, after which the surface is again prepared as before and a similar dressing replaced for a period of four days, to allow of closure by granulation of the openings caused by the removal of the sutures. Always employ the dry dressing for all aseptic wounds of the face, for the reason that with a dry dressing you can practically hermetically seal the wound by the procedure spoken of; and because the bac-

teria brought in contact with the wound by the air cannot propagate without moisture.

We shall now pass to the consideration of the probability and possibility of gaining and maintaining such a condition of a surgical wound in the oral cavity after an operation that infection will not take place from the pyogenic bacteria ever present in the fluids of the oral cavity. Although a quarter of a century has elapsed since the value of aseptic and antiseptic methods of general surgery were brought forward, the benefits derived from following these principles in the treatment of external wounds can be found detailed in all text-books of surgery of recent date, while the methods and procedure necessary to gain and maintain a condition in and about a surgical wound of the mouth are dismissed with but a line or so, if even spoken of.

What precautions should be taken to prevent the proliferation of the bacteria which are present in the saliva that bathes the wound constantly? This fluid is ordinarily alkaline or neutral, a perfect medium for the growth of the streptococci and staphylococci, which are the main pus-producing germs found as a rule in this field. Can not the proliferation and activity of these pyogenic germs and their dire effects be best prevented in this field by changing the normal secretions from alkaline, or by producing a condition which will prevent the development of these bacteria? If we can by any harmless method maintain a mild acidity of the fluids which bathe the surgical wound of the mouth without toxic effect, will we not gain asepsis of the oral cavity by the presence of free oxygen upon the wound's surface?

With the hope of changing the alkaline condition to one of acidity, the powdered acetate of potassium was dusted on the surface of wounds made in the mouths of two dogs for experimental work, with the idea that the salt would decompose and thereby leave liberated acetic acid on the wound surface. The wounds thus treated healed without undue inflammation; no infection occurred, and the wounds looked fresh and clean at each application. The wound of dog No. 1 healed in nine days; of dog No. 2 in ten days.

We experimented also on two dogs with similar wounds in the cheek with the bacilli *acidi lacti*. The wounds were dusted with this bacillus for the purpose of having ever present over the wound surface a slight acid secretion. Sugar was used with the bacteria

merely to dilute it. These wounds healed a trifle slower than those upon which the acetate of potassium was employed, but healed in eleven days. The discharge of secretion was rather pronounced, yet no infection took place. The wound was ever fresh and clean at the various applications.

In the next two dogs, under experiment with like wounds, oxychlorin was dusted over the part with the hope of having oxygen liberated constantly on the wound's surface, which would prevent the development of bacteria. The oxychlorin treatment in case No. 1 did not prevent the formation of pus; a slide made during the second day showed the presence of streptococci and staphylococci. Yet the infection lasted only two days, while the wound healed in ten days without the formation of scar-tissue. The second dog's wound, from like treatment, healed in nine days, and showed a beautiful clean surface at all times. The various wounds were treated three times daily.

This experimental work was carried further by again making like wounds in length and depth in the mouths of these dogs and infecting them with a virulent culture of *staphylococcus pyogenes aureus*. The wounds were not treated until the next day, to allow perfect opportunity for the growth of the bacteria. The wounds under the treatment with oxychlorin showed on the second day of treatment inflammation and a great quantity of pus, while the slide made showed the presence of staphylococci. The inflammation did not cease increasing until the ninth day of treatment had passed, though the pus began to decrease at the end of the seventh day, ceasing in ten days more. The dogs under oxychlorin treatment had to be fed upon a bread and milk diet for twelve days, as a result of the great inflammation in the cheek tissue. In the cases where potassium acetate was employed the inflammation and infection increased for a period of five days only, yet the slides made showed the same infection as in the preceding case. The inflammation and pus secretion practically ended after eleven days; infection controlled in fourteen days.

Reviewing the experiments where the wounds were infected with the same virulent culture of *staphylococcus pyogenes aureus*, the slides made the following day showed the same infection. These wounds were dusted on the following day with another culture of bacteria, using the bacilli *acidi lacti* and sugar. Slight inflamma-

tion about the wounds' edges appeared during the fourth day; the afternoon of the fifth day the inflammation began to increase, and continued to increase slowly for three days. When eight days of treatment had passed the inflammation and infection were rapidly subsiding, and on the morning of the tenth day a fresh, clean surface was presented, with but slight oozing of secretions; and slides made on the evening of the eleventh day of the wound that had been dusted with the lactic acid-producing bacillus showed the wound to be free from infection and healing kindly.

The wounds which were infected with the pus-producing germs and treated by oxychlorin, potassium acetate, and the lactic acid-producing bacteria (*bacilli acidi lacti*), showed the following conditions: Under oxychlorin the infection was controlled in seventeen days; pronounced inflammation present fourteen days; pronounced swelling present twelve days; bread and milk diet twelve days. Under potassium acetate infection was controlled in fourteen days; pronounced inflammation present six days; pronounced swelling present four days; soft food as diet four days. Under *bacilli acidi lacti* and sugar infection controlled in eleven days; pronounced inflammation not present; pronounced swelling not present; regular diet throughout. We assume that the reason wounds under treatment with the lactic acid-producing bacillus and acetate of potassium did so well was because we were able by this procedure to create and maintain more constantly over the wound surface a slight acid condition instead of an alkaline or neutral one.

I shall carry this experimental work further on similar grounds, including the treatment of the pus-pockets and suppurative conditions which we find about the roots of teeth, using potassium acetate and the lactic-acid-producing bacillus to see if we can not control more quickly infection in these parts.—*Cosmos*, Oct. 1900.

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WHEN THE DOCTOR COMES.

BY CHARLES D. CENTER, M.D.

Gran'pap's sick, an' all on us are feelin' purty blue,
Fer he's gettin' purty old, an' weak an' feeble too,
We're all a'mighty fond on him; the day w'en we can't see
Th' ol' man sittin' by the fire—th' Bible on his knee,
Is goin' to make us orle sad. Pap sets an' twirls 'is thumbs,
Awaitin' fer th' gate to click w'en the Doctor comes.

Bill sees 'im drawin' up the lane, so Pap he ups and goes
 'Tu tie th' horse, an' blanket him; th' Doctor 'll be mos' froze.
 'Th' Doctor's voice is jest ez strong 'n cheerful ez can be.
 He sez ez how he thinks th' snow 'll last all thro' Feb'y,
 But Pap's voice 's harsh, an' sorter gruff, an' he acks so kinder glum.
 But he's cheerfuller 'n he was before, fer th' Doctor's come.
 'En w'en he comes inter th' house Mam takes his coat an' hat,
 An' puts a cheer up by th' fire th' same place where he sat
 Th' las' time he was here. An' w'en he's warm he walks
 Right inter th' spare bed room, an' he an' Gran'pap talks.
 An' he feels 'is pulse, an' th' rest ov us are keepin' purty mum.
 But we're jest doggon orfle glad that the Doctor's come.

But he stays in thur so tur'ble long th' figgits gits hold on Mam;
 An' mebbly me too, fer she boxes me an' tells me not tu slam
 Th' door. But Gran'mam she jest sits an' a tear runs down 'er face,
 An' she sez, kinder soft an' slow, "O Lord, show us thy grace;"
 An' that makes a nut come in my throat an' I feel orfle bum!
 But things is goin' tu go all right fer the Doctor's come.
 'En he comes out, an' looks around, an' Mam she kinder braces,
 An' asks how Gran'pap 'll git along. An' then th' Doctor's
 Jest th' han'somest ye ever seen! An' he sez "There, don't fret,
 I shouldn't wonder but Gran'pap 'll bury us all yet."
 An' then another tear rolls down an' drops on Gran'mam's thumb.
 But she looks orfle happy now th' Doctor's come.

—*Doctors' Magazine.*

* * *

ANESTHETICA DOLOROSA. By E. M. Epstein, M.D. Liebreich seems responsible for this term and the apparent contradiction it involves. He starts out by referring to saponin, which, while it is a local anesthetic, is nevertheless not available in medical practice on account of its painfully irritating qualities. Since Koller discovered the local anesthetic property of cocain in 1884, a number of other substances were recommended for the same property. Liebreich showed by experiments on the lower animals that while many of these substances locally anesthetize, they yet produce pain at the same time, as is the case with saponin.

This surprising fact is most readily demonstrated on animals that have a musculature in their skins. When the skin of a rabbit or guinea-pig is pricked with a needle there ensues a reflex action

which shows itself in a motion of the skin. When a subcutaneous injection is made into such a sensitive skin with an indifferent substance there will ensue no alteration in the reactive capacity. When, however, an effective substance is injected there, a circumscribed space of small diameter becomes insensitive, i. e., a prick with a needle will not result in a contraction of the skin, and even deeper operations can be performed there without the animal's resistance on account of pain. Yet despite this insensibility to external irritation the animal shows an inward subjective feeling of pain by its restlessness.

The eye is peculiarly fitted for testing local anesthesia. It must, however, be kept in mind that there are two kinds of anesthesia in the eye, viz., that of the cornea and that of the conjunctiva; and the reason for this is, that the sensitive nerves of the cornea pass chiefly through the ciliary ganglia. Testing the eye with cocaine it will be seen that the cornea is first anesthetized, and when the drug has produced ischemia the conjunctiva becomes anesthetized also. Substances which produce painful anesthesia make the cornea perfectly insensitive, while the sclerotica and the palpebral conjunctiva become red and inflamed, and the spasmodic closure of the eyelids leaves no doubt but that there is a painful effect produced at the same time.

We therefore see that a local anesthesia can take place contemporaneously with pain. The explanation of this phenomenon may be sought in the assumption that some substances may so affect the sensitive nerve-endings as to set aside their functioning while yet the trunk of these nerves is sensible to the irritation. Liebreich leaves it to further investigations to show how far this assumption is justifiable.

The above considerations have a special therapeutic bearing on antipyrin, which is not only an antipyretic but also an analgesic when subcutaneously given in gouty arthritis, neuralgias, sciatica, hemicrania and in all neuroses of an angiospastic nature. It will also relieve labor-pains, and cannot be given because it will delay parturition. Peripheral pains are relieved only when the injection is made close to the painful spot, but the injection itself is quite painful, and antipyrin is therefore a clear example of a painful anesthetic.

The connection between the chemical constitution of these bodies

and their peculiar effects is undiscernible. Chemical substances that stand very near may act very differently from each other; thus, sodium bromid is effective while potassium bromid is inactive. In the same way are most of the iron salts inactive, while iron chlorid produces in animals the clearest effects of a painful anesthesia. Most of the ethereal oils are very excellent samples of this, and the following are the effective ones: Oils of anise, bergamot, calamus, chamomile, caraway, cloves, cinnamon, cassia, cedarwood, citronella, cumin, [eucalyptus, [lavender, marjoram, origanum, salvia, sandalwood, sassafras, buckthorn, tansy and menthol. Ineffective are the oils of orange, citron, balsam copaiba, pine, wintergreen, peppermint, rosemary, turpentin, arbor vitæ and zedoary, and tereben and terpen hydrate are also ineffective. Schleich's method of local anesthesia is founded upon these experimental facts.

|| How various among themselves these painful anesthetics are will be seen from a list of them: Acid tannic, ammonium chlorid, burnt alum, antipyrin, cobra di capello poison, erythrophlein hydrochlorate, extract quassia, [extract sabin, [iron sesquichlorid, iron sulphate, hydrochinon, iron alum, sodium ethyl-sulphate, sodium bromid, lead acetate and resorcin. All when hypodermically introduced will produce local anesthesia with pain—*Alkaloidal Clinic*.

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LOCAL TREATMENT OF INTERSTITIAL GINGIVITIS.

By M. H. Fletcher, M.D., Cincinnati. Read before American Med. Assn. June, 1900. Talbot, when treating of interstitial gingivitis, says: "The exciting causes are either constitutional or local, but as a rule are local, or have local action." Regarding his experiments on dogs, he says: "While it is by no means improbable that constitutional factors assist in its early progress in man, still the exciting cause of this disease is tartar." Dr. G. P. Carpenter's experiments tend to establish the law that without a locally exciting cause the disease would not exist as such. The writer is in full accord with these opinions; consequently, from his standpoint, the natural and all-important treatment is to first remove the local cause by cleansing away the deposits found about the teeth, either superficial or deep-seated. This being accomplished, local germicidal and palliative treatment should be adopted and continued until health is the result, or failure established. To accomplish these ends many methods are pursued, but all must attain the same end

before recovery can take place, namely, removal of the exciting cause, for the laws of growth and repair are always the same under the same conditions, and if the cause be removed before it is too late, complete recovery is the result, without further assistance from the physician, and doubtless in many cases in spite of him.

For convenience in classifying we make three arbitrary divisions, as follows: acute, chronic, and sloughing stages of the disease. The writer, after examination, appoints the earliest date possible for beginning the removal of deposits. The majority of these deposits are hard, but many are soft and cheesy, especially in young patients, and even these soft accumulations may produce the incipient or acute stage of the disease. It is the writer's opinion that these early and softer deposits and their consequent irritation produce "the point of least resistance," which, in systemic dyscrasia, may terminate in the utter destruction of parts involved. In this stage the complete removal of these deposits in one or more sittings usually suffices for recovery as to local symptoms; if constitutional treatment is needed it most properly begins with the local work. The younger the patient the oftener and more watchful should be the attention in order to prevent progress of the disease. This treatment may be made three or four times a year, and be continued indefinitely.

In the second or chronic stage we will assume the tissues are diseased or destroyed one-third the distance from the normal gum-line to the apex of the tooth, involving the alveolar process with outer periosteum and gum tissues. In this instance, as in the other, all deposits must be removed and infected bone taken away; this will require from three to ten sittings, from a week to ten days apart.

The sloughing stage may be defined as that wherein so much of the tissues have been lost that the tooth is abnormally loose, indicating that more than half the bony support has disappeared. To induce recovery in this class of cases demands of the practitioner his keenest knowledge of pathology, and his greatest skill in assisting nature to produce what the surgeon would call a "healthy stump." The procedure here is the same as in the previous stages, excepting that it requires much more care and very greatly increased diligence, expecting the time for recovery to be much longer, if indeed it can be accomplished at all. In these cases, like all other pathologic conditions about the body, absolute reliance may be

placed in the laws of repair, for there is a constant and continual effort on the part of nature to maintain the normal, and if we as practitioners are bright enough to remove exciting causes we have done all possible. This idea would include what we call palliative, stimulating, and antiseptic treatment. During this time we should keep constantly in mind the fact that we are merely trying to assist nature to accomplish what the laws of the universe are compelling her to do.

In removing deposits each operator must select and use those instruments best suited to his individuality and the needs of the case, the necessity being to absolutely remove all deposits. It has been found that clean dentin or cementum, without periodontal membrane, is at least non-irritating, while deposits of any kind upon the root surface irritate, and will stimulate a continuous effort on the part of nature to get rid of it. In this instance, however, the effort to get rid of foreign bodies fails of its object on the intruder, but acts on the surrounding tissues and destroys them; hence the pathology of the disease. The complete removal of deposits having been accomplished, the attention should now be directed to the alveolar process, and dead bone or other foreign substance taken away. In actual practice the work necessary to remove deposits usually removes all other irritating substances. Dead tissue may be absorbed, but these deposits never are; hence the necessity of their removal.

If it were possible for all this to be perfectly done at one sitting, and the wound dressed and allowed to remain quiet and in perfect position, as can be done in other parts of the body, then no further attention would be necessary, aside from one or two redressings, several days apart, to maintain antisepsis. A week or ten days is suggested, for the reason that this length of time is usually necessary in the process of healing for new material to be formed. To irritate a wound with treatment every two or three days would seem a hindrance rather than a help to the process of repair, and this seems especially true with the sockets of the teeth.

One of the most impressive, and I might say astonishing things that has happened to the writer was viewed while pursuing embryologic studies in the laboratory. To watch through the microscope the manner in which channels or blood-vessels are formed in embryonic tissue or blood-clot is fascinating beyond measure, leaving an

impression ~~never~~ to be effaced. The blood has many important offices, not the least of which is that of clotting. A minor wound which can fill itself with blood-clot and be kept aseptic will sooner or later be rebuilt with its own kind of tissue, providing, of course, the power of the organ to functionate has not been destroyed; should this function be performed, then a healthy stump, or scar material of the next adjoining tissue, is the natural result. To destroy or even disturb blood-clot in an aseptic wound, within twenty-four or forty-eight hours after it has formed, is simply tearing down or injuring the false or preliminary scaffolding that nature has constructed for the rebuilding of lost tissue, hence the necessity of allowing a wound to remain quiet until sufficient effete matter has accumulated to need removal, which is usually in about a week or ten days.

If this view be accepted, then the typical procedure would be to remove at one sitting all foreign matter in or about the sockets of the teeth. The endurance of the patient might compel this to be confined to one or two teeth; this being accomplished, sterilize the wounds with medicaments, and permit them to fill with blood-clot, allow this clot to remain undisturbed so long as pus does not form. Just previous to, or at the time this stage arrives, the surplus matter should be taken away very carefully, but the new granulations should be most cautiously guarded from violence, if the most satisfactory results are to be obtained.

In actual practice, however, I believe most of us go over much of the field in one sitting, and often to the limit of the patient's strength. If several teeth can be thoroughly done at one time it is well; but the typical way, as stated, is to so do the work that no second scraping or cutting will be necessary, any more than an amputation should need be done the second time. Now, if the patient return in a week or ten days a much improved condition can be seen, and where the work has not been perfectly done there can be seen near the gum margin dark or bright-red spots where deposits have not been removed. If this deposit be deep in the socket, then lack of granulation tissue and pus will be the result, and other attempts must be made until the point of recovery or failure has been reached.

For removing deposits the writer uses such instruments as are illustrated by Talbot, in addition to those styles recommended by

Drs. Henry H. Tompkins and Storer How. I find instruments shaped like Dr. How's fissure chisels of the greatest value in removing deposits from the approximal surface of the roots, for they are thin, strong and efficient, and their varieties in shape will enable one to reach nearly all the approximal surfaces.

The medicaments used for treating the sockets may be any suitable antiseptics and stimulating remedy, and even escharotics may be applied with advantage to destroy tissue and bacteria and produce a healthy aseptic wound, this latter condition being the true fundamental principle of repair. The writer's practice is to use 5 per cent tincture of iodine in 50 per cent alcohol, to which is added as much oil of cinnamon as will be held in solution by the alcohol. After use of the instruments this is injected into every part of the sockets with a hypodermic syringe until the blood starts again, then the patient is discharged for one week or more. This treatment is continued until recovery of all the teeth is complete, or the best stage possible reached, in any event retaining all teeth so long as practicable. Complete recovery of all cases, however, is far from the writer's experience.

Accompanying office treatment, the patient should be required to carry on vigilant attention to the case; satisfactory cooperation is, however, not always easy to obtain. This is so often true that I deliver stereotyped lectures in each case on brushes, picks, dentifrices, with imperative and dogmatic instructions as to their continued use, believing that if the teeth are kept absolutely free from mechanical irritation or deposits, the disease as we now know it is practically out of the question.

A stiff serrated brush of the best quality with the rows widely separated is recommended, with instruction to allow at least one-half of the width of the brush to rub the gums. This not only insures removal of lodgment and deposits about the necks of the teeth, but gives a necessary massage to the gums, keeping them hard and healthy.

Tooth-picks of soft wood are recommended for use between the teeth. These should be thick enough to rub against the teeth on either side, thus preventing accumulations on the approximal surfaces at the necks. Soft pine or other light wood serves best for this purpose, whittled flat and thin at the point, then gradually becoming thick enough to do the work well on both approximal sur-

faces. The hem of a handkerchief or other fabric may be used to advantage when the teeth are not too close together. Whatever plan is adopted, the approximal surfaces at the necks should have exceeding care, for this is the locality first and most frequently attacked by the onset of the disease.

The fact that these localities are inaccessible to the cleansing action of food, tongue and lips, as well as to the brush, and that here the accumulations and disease most often make their start, tends to strengthen the belief that without local irritation the disease would not exist. It is our belief that these particular localities do not receive adequate care, either from the patient or practitioner, principally because they are inaccessible and troublesome to care for; but for this very reason they should have cautious and particular attention, especially in cases predisposed to gingivitis. For this purpose there seems to be nothing better in the patient's hands than the tooth-picks of soft wood.

The matter of leaving injurious splinters in the gums is far-fetched, for if such a thing should by chance occur, the splinter would be discharged from the gums in the same manner as it would from any other part of the body, with but temporary soreness. However, brushes and picks alone fail of their object unless they be accompanied by an efficient powder. A false idea about powders for cleansing the teeth seems always to have prevailed, as it does at the present time, namely, that a powder to cleanse the teeth must be capable of polishing them, and on that idea tooth-powders have been compounded from time immemorial, when the fact is that the natural polish of the teeth is almost universally the best they can have. Abrasives, such as chalk, sea-shells and pumice-stone, not only polish the enamel, but in time cut into the dentin at the necks of the teeth, which both dentists and patients know to their sorrow. The teeth do not need polishing, but simply to be kept free from deposits and lodgments. If this can be accomplished I think no one need fear disease of the gums, which always precedes periodontitis in all its variations.

¶ To the end of being able to use a dentifrice *ad libitum*, without danger of abrasion, and one coarse enough to take away all that a powder should remove, the writer has for months past been compounding and prescribing a preparation made from the hard parts of cereals, such as rice and Indian corn. The grit in this powder

does the work most thoroughly, without the least injury or wear, as must be self-evident. Pulverized cereal has been objected to on the ground that it ferments in the mouth. This is wrong, however, for only hydrated starches ferment, and to hydrate it requires boiling, the action of caustic alkalies, or long continued action of bacteria.

With this pulverized cereal is incorporated 25 per cent of soluble ingredients for sterilizing the mouth and neutralizing its acids. These ingredients are sodium borate, potassium chlorate, and potassium nitrate in some cases. The formula mostly used is:

R	Pulverized cereal.....	75 parts
	Sodium borate.....	18 parts
	Potassium chlorate.....	7 parts

Sweeten with saccharin and flavor to taste.

As a dentifrice this cereal tooth-powder does no possible injury, even by excessive use, but is perfectly safe. It may be used freely and often enough to prevent any accumulations whatever on any surface accessible to a good brush. Under the use of this powder the accumulations are not only kept away, but the surface of saw-toothed abrasions at the necks of the teeth become dark, and lose their sensitiveness, showing that the abrasion has ceased. Many confrères in my own city, and some of those present, can testify to the efficiency of this formula, not only as a cleanser, but as a most satisfactory medicinal treatment. When there is no stomatitis or gingivitis, the medicaments tend only to keep the gums hard and the mucous membrane in perfect health.

The fallacy of splinters from tooth-picks, like that false idea of "injury to the gums by hard brushes," has been the negative cause of the loss of innumerable teeth to mankind. These ideas, coupled with the use of something gritty for polishing the teeth, are mistakes that should be stamped out of the profession by its thinking men. The failure to cleanse the teeth, the use of soft brushes and inefficient dentifrices, and the omission of tooth-picks are the great negative causes of the disease under discussion. Civilization may be held accountable for such omissions, and we, as custodians of the organs involved, are directly responsible for much ignorance in prophylaxis.—*Jour. Am. Med. Assn., Aug. 1900.*

* * *

GOLD CAPSULE IMPLANTATION. By Clyde S. Payne, D.D.S., San Francisco. Modern surgery is mending wounded hearts following knife thrusts by stitching the edges of the wound.

Injuries to the head are impaired by inserting gold plates to protect the brain, to take the place of that portion of the skull lost. Silver elbows and gold femurs covered by the soft tissues are tolerated by nature and are serviceable. Broken bones of the arm and leg are repaired by uniting the broken ends with a silver splint held in place by small screws. The wounds heal kindly, and the metals become a part of the human anatomy, adding strength and comfort to injured part.

Dentistry is not behind in the advancement made in modern surgery. I can offer you now with certainty an operation that will revolutionize the old methods. It is the implantation or insertion of a gold capsule or root, the exact counterpart of a root extracted, or the exact adaptation of a gold capsule to an opening made in the alveolar process of any size or shape for the attachment of a tooth or any number of teeth on a bridge.

The operation is as follows: Inject the gum where a tooth has been lost with a 2 per cent eucain solution; open gum on lingual side of middle of the alveolar ridge; bring gum forward for restoration and natural effect, and with a small trephine make a well one-half the size of root extracted. The trephine will make an opening the same size from point entered to bottom of well. Enlarge this well at the bottom mesially and distally with a fine gold-finishing bur. Select a gold capsule the exact size of the trephine; fit this into the well; fill this with kneaded soft rubber. Compression of this rubber by hand-pressure will spread or expand the soft pure gold cup into the slight enlargement made at the bottom of the well, and will so perfectly adapt the gold that it is firm and immovable at once.

It gives no pain. The pressure is so slight it is not felt, and is equal in every part of the cavity. The tissues, both bone and gum, heal around it quickly by first intention. This rubber is removed after moulding the gold to the well, and to this gold root a crown or bridge can be firmly attached at leisure. I fill this gold cup or root with gutta-percha and attach a crown by means of a pin nearly large enough to fill the gold root. This may be done by fitting a second cup inside the one planted and fitting a porcelain crown to this second capsule. It can be brought to the margin of the gum and fitted accurately to the, upper margin of the porcelain tooth, and so accurately that no gold will be seen.

The operation requires accurate trephines and gold capsules of exact size. Do not imagine that the operation can be performed by instruments in every-day use. Do not try it. It will mean failure to attempt it in a careless manner. Absolute cleanliness and sterilization are necessary for quick healing. Keep the mouth clean after the operation. This operation has its advantages over the old method of implanting natural teeth, as there is no danger of infection or blood-poisoning that might arise from planting a root or a natural tooth from some other person of which you have no history. Another great advantage is, that it is not necessary to tie these capsules in with silk until healing takes place—they are firm from the start.

It is remarkable what the tissue of the mouth and alveolar process will tolerate. Those who attempt this operation will be astonished to see how soon all soreness and tenderness will disappear. The wound heals kindly, and at the end of two weeks the tooth is comfortable and as useful as the natural ones.

The entire success of this operation, aside from the proper anti-septic precautions in the preparation of the socket, depends upon the judgment and accuracy of your adjustment of capsule to cavity cut in the alveolar process and jaw.

Implantation of the natural teeth has been a failure in the hands of many men in the past, due to the fact that they have overlooked the anatomical conditions. The process labially is extremely thin, and in cutting a socket is frequently destroyed, so there is nothing remaining but gum covering root of implanted tooth. This forms a pocket for infection, the formation of pus and ultimate failure of the operation. After extraction of a natural tooth or root, and the usual shrinkage of the alveolar process following, a full-sized normal root can not be implanted; therefore it is necessary to implant a small root or gold capsule one-half the size of natural root, in order to have it completely surrounded by a bony tissue.

The capsules are made of 32-gauge pure gold in the following manner: Use an ordinary Morrison draw plate; reduce a small gold disk in cartridge form to the smallest hole (the capsule will yet be too large in diameter); continue reduction of capsule through the Kienzie wire gauge draw plate to No. 28 for the centrals and laterals. I had mandrels made for every other hole, and it will be necessary for you to do the same. The No. 28 hole you will require for

centrals and laterals. For bicuspid, or where you have abundant tissue, you can use a slightly larger capsule, dependent upon amount of hard tissue, after extraction of tooth and the absorption that follows.

I recommend two sizes of trephines, Nos. 2 and 4 Walker-Younger, and Alport's C and D bone burs. The D bur will cut down the spicula of bone at the bottom of the well after using a trephine, and the C bur will enlarge the opening at the bottom mesially and distally to receive the expanded cap. A heavy lance should be used, and with this I open gum and raise periosteum, bringing it forward before introducing the trephine to secure restoration and a bone deposit at cervical margin.—*Pacific Dental Gazette*, Oct. 1900.

* * *

UNUSUAL CASE OF HEMORRHAGE. By Chas. A. Clark, L.D.S., England. Cases of hemorrhage after tooth extraction are in the experience of every dental surgeon, but a case where a tooth had failed to be extracted is somewhat unique. Miss D—, aged about 20, came to have an abscessed central removed under gas, and if possible also the bicuspid and first molar stumps—upper right. The central was rather firmer than I expected, but after extracting it I attempted to extract the molar stumps; but as they squeezed up on closing the forceps, and as also the patient was recovering from the gas, I desisted, she leaving in a few minutes. This was about 12:30. At 7 o'clock in the evening she returned complaining of bleeding. On examining the mouth I found she was bleeding profusely from the gums of the molar stumps that had not been extracted. Ice had been held in the mouth all day but had failed to check the bleeding, and in fact it was so profuse that while searching for the bleeding part the patient's head had to be tilted on one side to allow the blood to flow out, as otherwise it filled her mouth and gave me no time for examination. On removing the clot I found that the bleeding was apparently from the palatal gum, but being unable to check it for a more sure examination, and there being no depth of socket to plug, I pressed on a large piece of wool soaked with a saturated solution of tannic acid in absolute alcohol, and held in *in situ* for a few minutes, pressing firmly. This stopped the bleeding, and placing a thick pad of lint on the wool for the patient to bite on, I sent her away until morning, giving the usual directions about ice and the avoidance of warm food, etc.

On returning in the morning the patient said there had been no recurrence of the bleeding, and I very carefully removed the piece of wool with the tannic acid solution, which disclosed gum of about a quarter of an inch in depth and which had bled—as I had thought—from the entire surface, there being no unusual blood-vessel present. I have since found from the medical man who attends the family that she is a bleeder. I have *not* extracted those molar stumps.

Does hemorrhage after extraction take place more often after gas administration? I think so.—*Jour. Brit. Dent. Assn., Nov. 1900.*

TRANSPORTATION OF DISEASE BY DUST.—Harold C. Ernst says that of the irritant action of dust upon the respiratory apparatus there can be no doubt, as is illustrated by the photomicrographs of the dust from the streets, which show a variety of minute jagged particles of mineral and vegetable origin. This material also carries living forms of the higher bacteria. E. Germano has thoroughly studied the subject of the possibility of the transmission of pathogenic bacteria by dust. He concludes that it is a settled matter that they must be dry to render their transportation by dust at all probable. The bacteria of typhoid, cholera, plague, influenza and gonorrhea resist drying for so long a time that their chances of transmission are slight. The streptococci, pneumococci, and diphtheria bacillus may be carried by dust, as they show great variation in their resistance to drying. The diplococcus intracellularis, the staphylococcus of suppuration, and the bacillus of tuberculosis are still more resistant to drying, and the spore-producers—anthrax, malignant edema, tetanus, etc.—may resist drying for an indefinite period. The conclusion would seem to be that the danger from dust is greater from its direct irritant qualities than from the chance of transportation of any infectious disease.—*Boston Med. and Surg. Jour.*

OXYGEN AND EXERCISE.—Dr. A. Foxwell of London states that the first result of exercise is to increase the rate and depth of respiration. The respiratory quotient—that is, the amount of carbonic acid divided by the oxygen—is not increased with exercise, as the tissues are as rich, if not richer, as when at rest. This necessitates an increase in the amount of oxygen absorbed, since a man gives off more carbonic acid when undergoing exertion than when at rest. It is a strange fact that arm-work per unit of work done requires a greater absorption of oxygen than climbing; while climbing takes more than walking on the level. If the amount of oxygen absorbed during sleep is 100 grams per minute, then there would be absorbed 500 grams by a man walking at three miles per hour on the level, and 5,000 grams in climbing a yard high, and in turning a wheel with the arm 7,000 grams for an equivalent amount of kilogram meters. The enormous increase in the amount of oxygen absorbed and carbonic acid given out must necessarily act to strain the organs, and Dr. Foxwell believes that the lungs and the right ventricle of the heart bear the brunt of the extra labor involved in short strenuous exertions.

Letters.

MERITS OF A SEAMLESS CROWN.

To the Editor of the Digest,

CHICAGO, Dec. 15, 1900.

DEAR DOCTOR:—I can not understand why the seamless crown, with all its beauty, artistic outline and contour, should be called a fad when everything is in its favor, for besides the above it can be fitted to the root with minimum discomfort to the patient, and certainly any means whereby the burden of an operation is lessened to all concerned is at least commendable.

During the discussion of a paper on "Constructing a Matrix for Seamless Crowns," read by Dr. J. H. Prothero before the Chicago Odontographic Society, Nov. 19, this form of crown met with overwhelming opposition. Many arguments were used against it; one man said it was too weak at the very point where it should be strongest; another found it necessary at times to grind away the entire cusp after the crown had been finished; another thought he could do as well with the contouring pliers, and to prove this statement Dr. Goslee exhibited a crown made by himself by the "sectional method," with cusps most beautifully carved. I failed to detect, however, any of the artistic results produced by the seamless system.

The above are poor excuses for condemning the idea. If properly handled in swedging the gold is but little thinner at the largest diameter of crown than it is at the neck. The man who finds it necessary to grind away an entire cusp after the crown has been finished possesses no advantage with any other method, for surely no one would think of putting on a crown without first reenforcing the cusps. Again, the fact that in a few simple cases one can do as well with contouring pliers can not justly be used as an argument against the seamless method, for any one can achieve some kind of a contour on a crown with pliers.

The seamless crown, however, gives us an absolutely accurate fit at the neck, not at one point of contact only, but for a sixteenth of an inch more or less, as the case may require, and a contour corresponding with the adjoining natural teeth in all cases. These results may be obtained with little discomfort to our patient, as the con-

touring is all done in plaster on the model. If, however, the above results are expected without some effort, skill and patience on the part of operator, he will undoubtedly find at least two reasons for condemning the system—first, because he can do as well or better with contouring pliers, and second, because he will find the gold too thin in places, in fact, so thin that it will break through while swedging. Those who condemn the method very probably do so because they don't know how to use it.

In this same discussion I remarked that beautiful results might be obtained by using the seamless method for bicuspid, where you cut the front out afterward and solder or otherwise put in a porcelain facing. A few days later there appeared in the November DIGEST a statement by Dr. Goslee, who reported the meeting for this journal, that I advocated such a crown, "supposedly because there would be no joint to come unsoldered." He may guess once more, for there was not a word said about joints coming unsoldered. Dr. Goslee further says that I would be more in line with progressive prosthesis if I used porcelain for such teeth. Now I fully recognize the beauty of porcelain and use it very often, but if his idea of progressive prosthesis is based upon the indiscriminate use of porcelain in such cases, I would rather not be in line.

Yours truly,

H. C. WAACK.

BALTIMORE LETTER.

BALTIMORE, Sunday afternoon, Dec. 16, 1900.

Dear Digest:

You have told me just how to mail this letter and when; but though I am agreeably disposed, I find it is not quite so easy to get it off. If you really want to be obliging you might omit a few of your small directions, and throw a block or some obstruction in old Father Time's machinery, or do something to check the mad gait of this gasping and dying century. Not that there is much to be gained now by a few moments saved of the little that is left, but it would at least add to our peace of mind not to be bumped square up against a brand new cycle in such a dizzy whirl.

We reached home this morning at five o'clock from Washington, where together with visitors from Chicago, Pittsburg, Philadelphia, New Jersey and North Carolina, the members of the

Maryland State Association were most delightfully entertained by the Washington City Dental Society. We had a twelve o'clock luncheon, a visit to the Army and Navy Medical Museum and Library, a six o'clock meeting with an interesting paper by the always entertaining Dr. Hugo, and wound up with a banquet that was a corker. Good fellowship seemed to be on the rampage and happiness beamed from every face. The speakers were at home and not distressed. Some good stories were told and not an untoward circumstance occurred.

An interesting feature was the presence of Congressman Otey of Virginia, who has, in session and out, contended for the appointment of dentists in the army, and whose efforts have finally been rewarded by the passage through the House of the Army Bill, with an amendment arranging for the appointment of thirty dentists in the army. There seems little doubt of the passage of this measure by the Senate and of its finally becoming a law.

Some dissatisfaction has been expressed with the measure, and certainly it falls far short of securing for dentistry all that was intended by the original measure, or as much as has been secured by the veterinary surgeons. It seems, however, that the latter measure has little chance of final passage, while the dental measure and those having it in charge have made friends everywhere, especially in the department under whose control its provisions will be carried out. Mr. Otey well said that "He who pitches his voice too high will not be able to finish the song." Gradual improvement and increase in numbers will certainly follow, as the dentist will inevitably make his services essential to the American soldier. All we want is a chance to demonstrate to those interested in the improvement of the service the usefulness and helpfulness in surgery and in the more restricted practice of our specialty. The dental surgeon then will be a fixture, not only in the army but in all other branches of government service.

It seems a little like there might be a scramble for the three positions of examiners. Candidates are looming up everywhere. Above all, we hope it will not degenerate into a political contest. The Surgeon General has repeatedly said that professional endorsements alone were to be considered. If he can only stick to that we may expect to get clean and efficient men.

Dr. Brophy of your village is spending to-day in our city. Dr.

Waters has him out behind his side-wheeler and it may be expected that the doctors will get a fast ride. For the honor of our city let us hope so, for Dr. Brophy is himself an owner of blooded stock.

Oriole has an invite to go out your way in the near future, and if he comes he'll stop in and look your devil-shop over.

Sorry to hear Dr. J. N. has been sick. Give him our love.

Yours always,

ORIOLE.

NEW YORK LETTER.

NEW YORK, Dec. 15, 1900.

To the Editor of the Digest,

MR. EDITOR:—We know one dentist who went to Europe this summer, had a good time, saw a great deal, and believes he acquired something which will pay the expense of his four months absence. In Berlin he called on Dr. Miller, but unfortunately found him in rather poor health. Next he visited Dr. Stahl, who has given considerable attention to attachment splints of metal, following somewhat Dr. Michaelis' methods in Paris. When reaching Dresden our friend called upon Dr. Jenkins, but he was in Paris. However, his assistant, Dr. McBride, and his German woman assistant, an expert in ceramics, showed the visitor everything there was to be seen and gave him all the information possible. In consequence he has returned home full of enthusiasm over the porcelain inlay art, and judging from the specimens brought back we must say that it is an art of high degree. The profession probably does not realize to what perfection this work has been brought by those skillful in it.

It is stated that the French dentists are not waiting with open arms for Americans to come over and settle, and they do not disguise the fact. They have, however, some good examples of American dentists who are already settled in Paris. Legislation in America lays us open to a more valid charge of selfishness than can be brought against the native practitioners in foreign countries. Over here we do not allow a dentist to move from one state to another without taking examination and overcoming a lot of nonsensical red tape.

We are pleased to record two notable weddings in the fra-

ternity, and both contracting parties are reputed to have captured a fortune. The daughter of Dr. Deane has married a reputed millionaire; and the son of Dr. E. Parmly Brown has carried off an heiress. She may not have quite a million, but close to it—anyway, enough if they are economical. This son was in the Cuban war and got his epaulets.

Many New York dentists have taken to horseback riding. Dr. A. L. Northrup may often be seen on his fine Kentuckian. Not many years ago the doctor was threatened with pulmonary trouble, but now at sixty-four he is the picture of health, and really seems too big and tall for his office. Drs. Parker and Francis are also enthusiastic horsemen. Dr. C. M. Richmond rides an automobile, but many others still prefer the wheel.

A few evenings ago we met Dr. John B. Rich. He was walking rapidly, although nearly ninety.

The Million \$ Dental Co. is in full operation in the St. James Building, with fine rooms and all the modern improvements. Some fear that "this move will knock dental practice silly," but we trust not. This is a big world. It is reported that one of Baltimore's most prominent practitioners is in the enterprise. Where is Oriole?

Dr. J. W. Simpson, one of the Galveston sufferers, has lately located in this city, and seems already to have found patients. We think he will be a valuable acquisition to our professional gatherings.

Who says we are not in an age of advance? An M. D. read a paper before the November meeting of the Odontological Society on "Reflex Aural Symptoms Dependent upon Dental Caries," and addressed those present as "Odontologists." In the discussion following the article one distinguished member gave pathetic vent to his feelings. He acknowledged the honor and congratulated the society upon being truly appreciated in the minds of such a learned body as the profession of medicine. He thought it should be a comfort to us, because some who had once occupied these halls of learning, where only advanced science had a true presentation, were betaking themselves into new and experimental fields, showing a decided tendency to wander away from the original flock. He closed by relating that one of our former prominent members had virtually abandoned his allegiance and asso-

ciations; had dropped his D. D. S., and turned his entire attention to the calling of a *stomach doctor*. Recently we noticed a professional looking person measuring a door-plate, and on it we read "Dr. ———, Stomatopathist." Perhaps this is the one to whom the aforesaid member alluded.

New Jersey has again furnished a sensation. Some members of the state examining board accused Dr. Meeker of incompetency, and of unfairness in marking papers, and preferred charges against him before the governor, which were dismissed. The October meeting of the Central Dental Association was a large one, as the members wished to congratulate Dr. Meeker on his victory over his accusers. Two sets of resolutions were passed, and Dr. Meeker can well be proud of the support and sympathy accorded him by his professional confreres. It seems a pity, however, that the profession in New Jersey, which is notably wide awake and progressive, should have so many of these unfortunate occurrences. We would suggest that the business end of some of the hornets be removed, so that a Meeker spirit may prevail in the state.

Let us close by saying, with Tiny Tim—"A Merry Christmas to us all, and God bless us every one."

Cordially,

NEW YORK.

TUBERCULOSIS OF THE TESTICLE, especially in children, may have as its primary source of infection carious teeth with ulceration of the gums about them, and defects in the mucous membrane of the nose, mouth, tonsils and middle ear, with subsequent infection of the cervical glands.—J. B. Murphy in *Jour. A. M. A.*

ANATOMY OF THE ACCESSORY CAVITIES OF THE NOSE.—Dr. Gustav Bruhl concludes from his studies that infection of the antrum of Highmore can take place only if the antrum is large or of medium size. To open the antrum through the cuspid fossa, if the antrum is small, is successful only if the opening is made close to the infraorbital ridge. Berlin. Klin. Woch.—*Jour. A. M. A.*

ELECTRICITY FOR GERMS.—Dr. Zierler of Berlin has published the fact that he has practically applied an important discovery made at the Hygienic Institute of Wurzburg University, and succeeded in destroying bacteria in the teeth and jaws of living people, by the electric current. The process, when correctly applied, is absolutely painless. A needle electrode is introduced into the carious roots of the teeth and the other electrode is applied on the gums. He claims the teeth which were formerly considered lost can be saved by the application of this invention.—*Pacific Med. Jour.*

The Dental Digest.

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Where All Communications Should be Addressed.

Editorial.

DECISION OF INTEREST TO NEW JERSEY MEMBERS.

Our readers will remember that in the July issue of the DIGEST we gave the names of several members of the Protective Association in New Jersey who had been sued by the Crown Co., and further stated that organization was trying in those cases, as they had in others, to compel the men sued to bring their books into court and have an examination of them before a Master in Chancery, on the plea that the Crown Co. wished to know the amount of damage to which they would be entitled should they succeed in obtaining a judgment against the defendant. The Crown Company's real motive in thus compelling members to submit to this most humiliating and annoying proceeding was simply and solely to compel them to settle, rather than be put to all the trouble involved. In passing, we might state that there has not been a single instance in all this litigation where the Crown Co. have shown any desire to test the validity of their patent claims, but in all cases they have resorted to unusual and sometimes questionable methods, such as would most annoy the dentists sued, hoping in this way to stampede the Association and to secure moneyed settlements. The Protective Association has, however, succeeded in blocking all these attempts, the most notable one being in Massachusetts, where, although the Crown Co. started out to terrify the whole state into paying them tribute, and even went so far as to put United States marshals into prominent dentists' offices, the Association checkmated every move, and finally had all the cases dismissed, as was stated in our August issue.

This attempt on the part of the Crown Co. to have the men who were sued bring their books into court was first tried in Massachusetts, but the Court of Appeals refused to grant such an order and pronounced the procedure illegal. The same move

was made in New York, and while Judge Lacombe at first granted their petition, he subsequently gave the Association's attorney the privilege of arguing against the motion. When the same tactics were tried in New Jersey, Mr. Offield fought the move and refused to have his clients appear in court, as was stated in the August DIGEST. The attorneys of the Crown Co. failed to obtain a contrary order, so the matter was postponed until the October session of court. On October 9 an attempt was made to secure a fine and commitment for contempt of court of Dr. Joseph S. Vinson of Newark, one of the members sued, for refusal to attend upon preliminary examination of himself as a witness under an order obtained by the Crown Co., but Federal Judge Kirkpatrick who heard the case took it under advisement. Now the judge, upon our motion and upon our argument made and briefs filed in behalf of Dr. Vinson, has vacated and annulled this order, and decided that no defendant dentist in the state of New Jersey can be compelled to so attend and submit himself and his books to examination. This is a great victory for the Association, and should ease the minds of the New Jersey members, as it relieves every defendant in the various suits pending, and in those which may hereafter be brought, from being forced to stand this disagreeable, expensive and annoying proceeding.

The certificates of membership in the Association have now been issued to every member who has paid his assessment. Any one in good standing who has not received one of these documents will kindly notify us at once, so that the oversight may be rectified. We are gratified to state that the certificate has called forth nothing but praise, and that nearly all the members are not only pleased to receive it, but are proud to hang it in their offices. Furthermore, it will evidently be the means of inducing some "almost persuaded" dentists to join our organization, as several new applications have come in since the certificates were mailed.

We promised last month to give our readers some more facts in the examination which we had secured of Dr. Sheffield, president of the Crown Co., and his brother-in-law, Kyle, the so-called defendant. Further proceedings were delayed, however, owing to a press of other business in the courts, but the matter

will be brought up again very soon, and our readers will be kept informed of all that transpires.

READER OR ADVERTISER—WHICH ?

One of the most deplorable features of the dental trust is the fact that nearly all the journals of the profession are controlled by it. The supply houses are operated under different names, and the several publications are ostensibly edited and owned by different individuals and firms, but the real ownership is vested in the combine. Of course these publications deny that they are controlled by a trust, they even deny the existence of such a thing. However, it is not our purpose in this article to explain the operations of the corporation which endeavors to control the traffic in dental supplies. Its evil influence has been many times demonstrated to every dentist who has been compelled to pay exorbitant prices. We desire at this time to direct the attention of the profession to the importance of having an independent press. If the trust were to succeed in purchasing every dental journal, the dentists would not only be robbed, but would be kept in ignorance of the fact that they were being robbed. Therefore it is of absolutely paramount importance that they shall continue to have some independent means of learning what may be termed the news of the profession.

At the present time there are about twenty journals published in the United States, professedly in the interests of the science and practice of dentistry, and all but two or three of them are controlled by the trust; that is, they are either run by some combination dental supply house, or else carry trust advertisements. We maintain that no journal which is under any obligation whatever to this combine can be independent. There is one journal, not conducted by a dental supply house, which was started to be the independent and representative journal of the profession. However, those having it in charge have seen fit to accept trust advertisements, so the publication has certainly lost the right to call itself "Independent in character and free in spirit."

The great majority of these twenty journals are undoubtedly dependent upon the trust's patronage for very existence. In fact, we know of one in Chicago which we feel safe in saying does not circulate eight hundred copies per month, exchanges and all included,

so it can readily be seen that its subscription list does not furnish the revenue which enables it to appear each month. Relatively the same conditions probably prevail with most of the others. Our readers may ask wherein this concerns them, and we shall be happy to answer this question. The editors of these papers which are dependent upon the combine for support take their cue for every act from the few men who have subsidized them with an advertisement. They sneeze only when their benefactors take snuff. Their bonds are so tightly drawn that it is impossible for them to express an opinion upon any subject under heaven except the superlative merits of the wares their patrons offer. Such journals content themselves with saying safe things, and they appeal to the readers about as much as a last year's almanac would. They print the alphabet and the multiplication table, and predict frost in January and flowers in June, but they were never known to offend an advertiser by printing news. It is therefore manifest that since these publications are edited solely in the interests of their trust advertisers, to the detriment of the readers, they should not expect nor receive the support of the latter.

Far be it from us to belittle the value of advertising, for no paper can exist without it, but the most important factor is the reader, for without readers, of what possible use is a publication to an advertiser? This is why the editor should print without fear or favor all the news he can obtain, for in him is vested the desire of thousands who wish to know. If a journal is made so newsy and entertaining that subscribers are secured in large numbers, the advertising will follow naturally. As proof of this proposition, we would state that the last issue of the *DIGEST* contained fifteen pages more of advertisements than was carried by its closest competitor, excepting in both instances the advertisements inserted by the respective publishers. After all, the paper that affects a lofty scorn of the advertiser and fences him off its reading pages is really giving him the best value for his money. It offers him less slavish adulation, but presents his card to thousands of prospective purchasers. The modern reader is intelligent and spurns the journal that is plainly not conducted for his benefit.

This is the season when members of the profession are choosing their reading matter for the next year, so we trust an editorial along this line will be pardonable. In view of the facts given above, are

we not justified in asking every dentist to make his fealty to the DIGEST a personal matter? The issue is a vital one to the profession. Fortunately, your editor is engaged in the active practice of dentistry, and is therefore not dependent upon this journal for support. If he were, the DIGEST could perhaps not be so fearless in tone. We think it may be said without conceit, that if the publication of this journal were to be discontinued the loss would fall most heavily upon the profession. During the past six years we have given our time and money, and such ability as we possess, to the establishment of a journal that should represent the profession, and we have dared and shall continue to dare to tell the truth about the dental trust or any other abuse to which the profession is subjected. The DIGEST does not publish a single trust advertisement, and is warring against it and your other enemies. Furthermore, we print the news of the profession in succinct form, and avoid the prosy and tedious matter that so frequently fills the pages of dental publications. Since we have shown that the DIGEST is run simply and solely for its subscribers and not for its advertisers, may we not count upon your active and moral support? Thanking one and all for past favors, we would extend the compliments of the season to the profession at large, and especially to our subscribers.

Notices.

NOTICE CONCERNING DATE OF PUBLICATION AND INDEX.

Beginning with January, 1901, the DIGEST will be published from the 15th to the 20th of each month, instead of on the last day, as heretofore. Advertisers and contributors please note. Index for 1900 with January issue.

DISTRICT OF COLUMBIA DENTAL SOCIETY.

At the regular monthly meeting of this society, held Nov. 20, 1900, the following officers were elected for the ensuing year: Pres., H. J. Allen; V. P., J. H. London; Rec. Sec., Williams Donnally; Cor. Sec., L. F. Davis; Treas., M. F. Finley, Librarian, H. B. Noble; Essayist, W. N. Cogan.

CHICAGO COLLEGE ALUMNI CLINIC.

The eighth annual clinic of the Chicago College of Dental Surgery will be held at the College building Wednesday, Jan. 23, 1901. A large attendance is expected, and a cordial invitation is extended for members of the profession to be present. The program for the clinics will be announced later.

L. S. TENNEY, Pres.

H. J. GOSLEE, Chairman Ex. Com., 580 W. Madison St., Chicago.

OHIO STATE DENTAL SOCIETY.

At the thirty-fifth annual meeting of this society, held at Columbus, Dec. 4-6, 1900, the following officers were elected for the ensuing year: Pres., H. F. Harvey; 1st V. P., Otto Arnold; 2d V. P., J. B. Beauman; Sec., S. D. Ruggles; Treas., C. I. Keely, S. D. RUGGLES, Sec.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The next meeting of this organization, for examination of candidates, will be held at the Hotel Pfister, Milwaukee, Tuesday, Jan. 15, 1901, at 9 a. m. All examinations are conducted in English, in writing. A practical demonstration is also required, and applicants must furnish their own instruments and patients.

W. H. CARSON, Sec., Goldsmith Bldg., Milwaukee.

LATEST DENTAL PATENTS.

- 662,387. Dental head rest, V. W. Baker, Plainfield, N. J.
 - 662,539. Dental appliance, D. O. M. LeCron, St. Louis.
 - 663,068. Dental elevator, X. Dodel, San Francisco.
 - 663,066. Dental hand-piece, H. B. Mitchell, Canton, O.
 - 663,143. Mechanism for dental chairs, B. M. Wilkerson, Baltimore, assignor to S. S. White Co.
 - 663,178. Dental dam, N. Kuns, Santa Monica, Cal.
 - 663,507. Rubber-dam holder, C. W. Meguiar, Franklin, Ky.
- TRADE-MARKS.
- 35,571. Dental composition, C. Day, London, Eng.

RESOLUTIONS PASSED BY CENTRAL DENTAL ASSOCIATION OF
NORTHERN NEW JERSEY.

Whereas: Since our last meeting certain charges have been preferred against Dr. Chas. A. Meeker, one of the founders of this society, and who has continually been an officer of it for twenty-one years, during which time he has served this society with distinguished faithfulness; and

Whereas: Said charges were made against him by G. E. Adams, G. Carleton Brown, F. C. Barlow and E. M. Beesley, his fellow-members of the Dental Commission of the State of New Jersey, all of whom are likewise members of this society and subject to its discipline; and

Whereas: Said charges, filed with the governor of this state, accuse Dr. Meeker of wrong-doing and incompetency, in that they allege that in a specific case he did award to a candidate twenty votes, whereas his accusers, after considering in a secret meeting the same papers, found that but six questions had been correctly answered out of a total of thirty, so that the candidate should have received but six votes; and

Whereas: At a public trial before the governor Dr. F. C. Barlow, one of the accusing members of the Commission, under oath did testify that he had in the past examined under two of Dr. Meeker's subjects, so that he, Dr. Barlow, did feel competent to judge of the papers in dispute, and that he

had examined the papers, and had found the candidate had correctly answered but six questions; and

Whereas: Dr. F. C. Barlow still being under oath, on cross-examination was made to express his opinion separately of each of the thirty answers in the disputed papers, with the result that he admitted that twenty-two of these answers were wholly or in part correct, thus contradicting his affirmative testimony that but six were correct; and

Whereas: The governor has rightfully dismissed the charges and exonerated Dr. Meeker, be it

Resolved, That it is the opinion of this society that our honored member, Dr. Meeker, has been the victim of an unjustifiable attack, and that he is entitled to and is hereby tendered the hearty congratulations of us, his fellow members, upon his refutation of the accusations made against him. And further be it

Resolved, That these resolutions be spread upon the minutes, and published in the dental journals, as well as in the public press of this state, wherein the charges against Dr. Meeker have appeared, to the just end that he be fully exonerated.

Signed—F. Edsall Riley, Wm. L. Fish, H. S. Sutphen, Frank G. Gregory, C. W. F. Holbrook, C. S. Stockton, J. S. Vinson, John A. Voorhees, Lloyd G. Morgan, William P. Richards, W. H. Pruden, Nelson M. Chitterling, Harvey Iredell, C. E. C. Smith, R. M. Sanger, Henry S. Hull, J. L. Crater, F. L. Hindle.
N. M. CHITTERLING, Sec'y.

CHICAGO DENTAL SOCIETY.

The regular monthly meeting was held Tuesday eve., Dec. 4, 1900, at the new quarters in Schiller Theatre Bld'g., with the diminutive president, Geo. W. Cook, in the chair. The attendance, while large, was not up to expectations, in consideration of the program. Preceding the regular work, Dr. A. W. Harlan took occasion to present to the profession for the first time the successful results of his latest experimental work in the line of "pulp-digestion." The process of removing the contents of pulp-canals after devitalization thoroughly and effectively, no matter how small or attenuated they may be, consists of dissolving or digesting them by means of a preparation containing papain gr. i, glycerin gtt. i, and hydrochloric acid gtt. i; and does away entirely with the usual necessary instrumentation. The modus operandi is as follows: After the devitalizing agent has been applied and allowed to remain in the tooth for the usual length of time, the pulp-chamber is freely opened and the bulbous portion of pulp removed, then a small pledget of cotton is saturated with the "digestor" and placed in the tooth, sealed there hermetically, and the patient dismissed for from one to three weeks. When the cavity is again opened nothing remains of the pulp but a somewhat gelatinous mass, which is easily removed with the chip-blower or compressed-air syringe.

The proposition was well received, and since its practicability has been thoroughly tested, the profession should accord to its advocate due credit. If the method will do what is claimed, it will no doubt aid very materially

in the problem of perfect root-filling; for if but slight instrumentation be observed in simply enlarging the opening into canals, that free access thereto may be readily gained, it will overcome some difficulties in precluding the possibility of leaving fibres of tissue clinging to the walls of tortuous canals, or of packing them down into and thus clogging up the apices of the mesial and buccal roots of molars (with the attending results), where its use is mostly indicated.

The paper of the evening, "The Relative Duties of the National Association of Dental Examiners, and the National Association of Dental Faculties," by W. C. Barrett of Buffalo, was then read, and without being paradoxical was both eminently interesting and extremely disappointing. Interesting because of the terse, forceful manner in which the subject was treated by the essayist, and disappointing because of the lack of discussion. Dr. Barrett can blame only himself, however, for not having had what the society and all interested in the subject particularly desired, and what his paper deserved—a good, intelligent discussion of a most perplexing question. It is too bad that after having had so long to prepare the paper he was not able to finish it in time to send a copy in the whole, or even in the abstract, to those who, because of their fitness, had been selected to open the discussion, that they at least might have been prepared to do justice to the occasion. Not that any one would necessarily take issue with his ideas and views, but because of the increased value enthusiastic, well-informed debate always lends to the consideration of any topic of importance; and because of the injustice done the paper, those selected to open the discussion, and the members of the society, to whom an announcement had been sent that men prominent in the ranks of the profession would be present and participate. Dr. Ottolengui was not present, did not intend to be, and did not know that the paper was to be read at that time, though he had been asked to send his written discussion to be read, and had consented to do so, subject, of course, to his receiving a copy in time; and Dr. Crouse, although sick, would have attended had he been able to secure any idea of the substance of the paper, that he might be prepared to properly discuss it.

The paper itself was forceful and aggressive, and the arguments, while made from the standpoint of a college teacher, were strong and reasonable. He began with a criticism of so many of the older members of the profession for viewing the schools with prejudiced eyes because of the competition they were creating, and for looking at college teachers through the same eyes, because some few were perhaps selfish egotists. As a whole, however, he averred that they averaged with the rest, that fortunately circumstances forced them to remain active members of the profession; and that he knew of no college man, no matter how much ability he possessed, who had made a decent livelihood out of college work alone, and but few if any ever have.

To substantiate his criticism of those who were so narrow-minded as to look with prejudice upon the colleges because of the increased competition they necessarily created in the fulfillment of their function, Dr. Barrett thus briefly reviewed the history of dentistry. Shortly after the Revolutionary War the country with a population of 3,000,000 had ten (10) dentists,

and at the present time with a population of 75,000,000 we had in round numbers about 25,000 dentists; a ratio of one hundred times greater than a century ago, and yet it was safe to predict that the 25,000 to-day were far busier than the 10 were then. That this increase was due to the colleges he acknowledged, yet contended that if they have multiplied the number of practitioners they have also extended and broadened the ground that they may occupy; and that those who complain most are the ones who graduated a quarter of a century ago and have not kept apace with the times. Further, that the end of this marvelous progress has not yet been reached, that the dentistry of to-day is only a part of that of to-morrow, and that the college is the only legitimate avenue of entrance into the ranks of the profession. In defense of the colleges he then asserted that they could not make honest men of rogues, but must accept the material offered, and could then but present to them the opportunity.

With regard to the Faculties Association he said the history of nations proved that no one man or set of men could be trusted with absolute power without degenerating, and in view of the obligations and responsibilities the colleges assumed, that every fair man, teacher or not, must admit they should be responsible to and supervised by some competent authority to at least prevent degeneration.

A somewhat lengthy review of the examining boards then came, and they were referred to as being the outgrowth of the unsettled conditions existing in the early period of dental organization, when legislation was first required but before we knew what was wanted, and that it was secured unfortunately without concert of action, interstate consultation, or professional co operation, resulting as it has in a medley of conflicting enactments arraying the profession of one state against another.

The laws of one state, providing that the state society should have supreme power, were attacked as being "class legislation;" and those of another, providing that this power should be placed in the hands of an examining board appointed by the governor, were ridiculed with equal vehemence as being degrading, because they carried professional affairs into politics, and placed the board on a level with the ward caucus.

What is to be done was then asked, and as a solution of existing difficulties Dr. Barrett suggested that we must retrace our steps and endeavor to secure a wise and uniform legislation, one that will found and recognize three distinct branches of dental organization—each with its own special field of labor, each responsible and accountable to the law, each the peer, cooperator and auxiliary of the other, and yet an independent part of one coordinate whole. As in our civil government we have legislative, judicial and executive bodies, so could and should the state society, the examining board, and the colleges work in harmony to promote the same ends. But that neither in any expediency should assume jurisdiction over the other, as was recently the result of mistaken views of their own function, or personal ambition and thirst for domination and power, by the examining boards in attempting to meddle with the details of the conduct of schools, which was necessarily vigorously resisted because it threatened the independence, effectiveness, and very existence of the latter.

That there was plenty of room for the board to exercise all of their energies he then pointed out, if they would confine their function to regulating practice instead of teaching; exterminating fraudulent schools; preventing illegal practice, prosecuting violators of the law, and other executive instead of legislative business; and intimated that it was their duty to cooperate with and help the schools, instead of repressing them. Their effectiveness and sincerity was then questioned in the methods of examination adopted. It was here suggested that as the average member of state boards had graduated ten or more years ago, he was necessarily more or less in the dark regarding the course of instruction of to-day; and that in consequence, instead of making the didactic and theoretical branches the main issue in conducting examinations, the boards would better leave alone to an extent that of which they knew least, and devote more time to ascertaining the qualifications and fitness of the candidate in the *practical* lines, where they are more capable of judging. Their passing upon a candidate's papers, etc., in star-chamber session, and their refusal to give out grades and averages to a rejected candidate, were then roundly criticized as a farce, and your writer knows of instances which prove this a just criticism.

Granting it is imperatively demanded that the colleges must be responsible to some power, that power should lie in the hands of competent, unbiased persons, and not be given to examining boards for the reasons mentioned, nor to state societies, because they were but self-organized bodies without authority to enforce their own mandates.

In closing the essayist assumed there was nothing left but to put forth another effort to secure new and competent legislation, as nearly uniform in all states as possible; which would prescribe the duties of each, prevent encroachments of the one upon the other, and hold each rigidly to account with the courts as their judges. That we shall begin right here at home to this end, because of having the reputation of harboring more fraudulent colleges than all other states combined, and that we should enjoy the cooperation of every examining board, state, and dental society, which from the history of the past we will have from the colleges, because they are the only organizations that have spent a dollar to put forth a sustained effort to do that in which the boards should have taken the lead, instead of trying to regulate the colleges, who are faithfully and successfully trying to regulate themselves.

In opening the discussion Dr. Black said, that because of the rights of individual states uniform laws were out of the question, yet we should work toward an end as nearly uniform as possible. The law of the State of New York was the best and yet imperfect, but that if the profession should work as one man, its equal in all states at least might be secured. He concluded by affirming that the dental was the best organized of any of the professions, and that the Faculties Association had more power than any other professional body.

Dr. Harlan claimed that the Faculties Association possessed legislative power, in contradistinction to the examining boards, who were self-organized bodies without power, and that whatever action the latter might take in

executive session, may be undone or inoperative when the members return home to their own bailiwicks. Systematic dental education dates back to about 1860, and real education began only about 1880, and the dental profession was one of the most energetic industrious callings on earth, with a proportionately smaller tendency toward quackery than any other.

Dr. Brophy first stated that the legislation enacted by the Faculties Association was but that necessary to meet the exigencies and requirements, and that it in no way conflicted with the laws of our commonwealths, while these same laws prescribed the duties of examining boards. He believed a universal law was never possible, because it would be against the constitution, and he called attention to the fact that at the last meeting of the examining boards about twelve states were represented, while in the Faculties Association almost every state and college in the country had delegates in attendance. In conclusion, he paid a tribute to the strength and standing of the profession, and to the respect in which it was held, as illustrated by the fact that in all these years no legal trouble had resulted from the administration of anesthetics.

Dr. Reid then spoke at some length upon the duties of state boards, and with some fervor acknowledged that he as a member of one tried to do his part, but knew of instances where others, purposely or otherwise, fell short; and he concluded by criticizing the essayist for not having sent an abstract of his paper to some in advance.

Dr. Noyes suggested that all primitive aggressive movements invariably create strife at first, and there is no doubt but that the education of students needs supervision and stimulus from other outside influences. The profession should be the influence.

Dr. Barrett in closing apologized for not having finished his paper in time to send copies to those selected to discuss it, and acknowledged that while he had known of his appointment to read it before this society for several months, he had completed it only a few hours before leaving home. He then affirmed that the examining boards cannot legislate for the schools, any more than the schools can legislate for the profession.

H. J. GOSLEE.

News Summary.

J. J. VINCENT, a dentist at Brockton, Mass., was married Nov. 27.

C. L. MUNNS, 82 years old, a dentist at Philadelphia, died Dec. 4, 1900.

L. H. GIFFEN, a dentist at Webster City, Ia., was married Nov. 28, 1900.

HENRY NEFF, 81 years old, a dentist at Bridgeton, N. J., died Nov. 19, 1900.

JACOB STEWART, 74 years old, a dentist of Moline, Ill., died Nov. 17, 1900.

ERNEST DRAVER, 29 years of age, a dentist at Cloquet, Minn., died Nov. 20, 1900.

ARMY REORGANIZATION BILL passed the House Dec. 6 by a vote of 166 to 133. Among the amendments adopted was that providing for thirty dental surgeons. It now looks as if this bill might become a law.

E. M. VARY, a well-known dentist at Kingston, N. Y., died Nov. 5, 1900, from paralysis.

J. B. STREETER, 71 years of age, a dentist at Allegan, Mich., died with paralysis Dec. 10, 1900.

NEWS.—Electricians supply us with current topics of the day, and physicians with news of the weak.

W. H. JOHNSON, 30 years old, a dentist at Johnstown, Pa., died Nov. 30, 1900, presumably of blood-poisoning.

SOCIETY ITEM.—"Miss Hattie Miller was in town last week having some dental work done."—*Cynthiana (Ky.) Dem.*

JOHN E. ROBIE, 54 years old, treasurer of the Buffalo Dental Mfg. Co., died Nov. 24, 1900, from a stroke of paralysis.

C. E. RICHARDS, a young dentist at Fond du Lac, Wis., is on trial charged with assault on a Chinaman with intent to murder.

JOSEPH LATHROP, 66 years of age, and one of the oldest practicing dentists in Detroit, Mich., died suddenly of pneumonia Dec. 4, 1900.

A. C. THOMPSON, a well known dentist at Torrington, Conn., was married Nov. 28, 1900. He is a graduate of the Philadelphia Dental College.

FETCHING OPERATOR —"Dr. Ridgely operated successfully on several very fetching molars for John Gillett Saturday."—*Rapid City (Mich.) Paper.*

STATESMAN HARD UP.—A dentist at Willimantic, Conn., has brought suit against a Representative from his state to recover \$5.00 for dental services.

F. B. SLAYTON, 54 years old, a dentist of Geneseo, N. Y., died Dec. 9, 1900, from bromid poisoning. He was formerly wealthy, but died in the poorhouse.

DEATH FOLLOWS EXTRACTION.—A motorman at Chester, Pa., apparently in robust health, had a tooth extracted Nov. 20, and died soon after returning home.

JOHN O. SCOTT, 65 years of age, a dentist at Waupaca, Wis., died Dec. 5, 1900. He was a captain in the Civil War and was twice elected mayor of his town.

"THE BACILLUS" is a bright little magazine published in the interests of the medical, dental and pharmacal departments of the Illinois Medical College, Chicago.

SUCCESS ONLY PARTIAL.—"Tell me, Doctor, were you successful with that new patient?" "Only partially so; I cured him, but have not succeeded in getting any money yet."

DEFECTIVE SIDEWALK CAUSES DAMAGE SUIT.—A dentist at Salina, Kas., has filed a claim for \$1,814 for damages resulting from his falling on a defective sidewalk in that town.

FILLINGS DROPPED OUT.—A dentist at Newport, Ky., sued a patient for a bill for dental work, but the defendant testified that all but three out of fifteen fillings had come out, so the jury returned a verdict against the dentist.

SWALLOWING FALSE TEETH FATAL.—A man at Fall River, Mass., swallowed his set of false teeth recently, and although they were recovered, blood-poisoning set in, causing death.

WESTERN INDIANA DENTAL ASSOCIATION was organized at Terre Haute recently, and the following officers were elected: Pres., W. R. Mail; V. P., O. M. Brown; Sec., B. B. White; Treas., W. G. Rice.

SYRACUSE DENTAL SOCIETY at its meeting Dec. 10, 1900, elected the following officers for the ensuing year: Pres., A. D. Wells; V. P., J. E. Cummings; Sec. and Treas., W. F. Engle; Rep. Sec., J. H. Dower.

CHRISTIAN SCIENCE.—"It is very curious, the effect which Christian Science has upon the verbal bowels, particularly the third degree. It makes me think of a dictionary with the cholera."—*Mark Twain*.

POLISHING FILLINGS.—Keep a cake of calcined magnesia in the cabinet and when the last disk of fine cuttle-fish is to be used, touch it to the magnesia and you will give the gold a brilliant polish.—*Dental Hints*.

LUNAR CAUSTIC WITH COCAIN.—To make the application of silver nitrate less painful simultaneous use of cocain nitrate is recommended. The hydrochlorate is not suitable, as it precipitates silver as chlorid.—*Ztsch. f. Ph.*

PHYSICIAN ARRESTED FOR PRACTICING DENTISTRY.—A physician was arrested at Bridgeton, N. J., recently for practicing dentistry without a license. He was registered as a physician in three states, but not as a dentist.

MAKING USE OF HIS OPPORTUNITIES—"Dentist ——— is now crowded with work. He and his wife are well and popularly known throughout Des Moines society, and the doctor's practice is benefited thereby."—*Des Moines (Ia.) State Register*.

IGNORANCE ALMOST FATAL.—A sixteen-year-old girl at Manchester, Mass., recently applied carbolic acid to her gum to relieve toothache, and not knowing how powerful the drug was, she used too much. It is thought, however, that she will recover.

DIRTY TOOLS CAUSE BLOOD-POISONING.—A young woman at Sidney, Me., is dangerously ill from blood-poisoning, resulting from the fact that a traveling dentist infected her with dirty tools. Her face is swollen out of all recognition, and she may not recover.

CYLINDER OF GAS THIS TIME.—A dentist at Council Bluffs, Ia., had his office furniture badly damaged Dec. 5 by the explosion of a cylinder of nitrous oxid gas. Fortunately the dentist and his patient had just left the room, for the cylinder was blown into several pieces.

BRIBERY TO OBTAIN DIPLOMAS.—Dr. A. F. Emminger, president of the Ohio State Board of Dental Examiners, was recently offered by a stranger \$800 if he would give a license to practice dentistry. Some months ago he was offered \$500 on the same conditions. Unfortunately there is no prospect of punishment, as Dr. Emminger is not in possession of the names of the parties involved. The board has an odd case in Cleveland. Years ago all barbers pulled teeth, and two Cleveland barbers are now claiming the

right to pull teeth, because the law of 1899 exempted from examination all dentists then practicing.

JEFFERSON COUNTY DENTAL SOCIETY, at its sixth annual meeting, Dec. 10, 1900, in Watertown, N. Y., elected the following officers for the ensuing year: Pres., D. A. Scobie; V. P., G. R. Danforth; Sec. and Treas., R. F. Casler; Ex. Com., G. B. Parker and E. E. Harrington.

UNPAID BILL CAUSES WORRY.—Patient: "Doctor, I can't sleep at night; I tumble and toss until morning." Doctor: "That's bad, let me see your tongue. There does not seem to be anything the matter with you; perhaps you worry over that bill you have owed me for two years."

TEETH IN PAWN.—One of our subscribers in New York recently saw a large number of sets of false teeth displayed in a pawnbroker's shop in that city, and upon inquiry the pawnbroker stated that some of them were old, but that a large number had been taken directly from the mouth of unfortunates who were hard up.

NEGRO WISHES LICENSE.—A negro at Louisville has filed a mandamus suit to compel the Kentucky State Board of Dental Examiners to grant him a license to practice dentistry. He alleges that he has a diploma from the Dental College of the Western University of Illinois, wherever that may be, but the board refuses to recognize it.

QUONEHTACUT DENTAL CLUB (CONN.) held its annual meeting Dec. 11, 1900, and also had a dinner in honor of the fifty-sixth anniversary of the discovery of anesthesia by the late Dr. Horace Wells. Charles T. Wells, his son, was the guest of the club. Officers were elected as follows: Pres., Edward Prentiss; V. P., J. Tenney Barker; Sec. and Treas., Chas. McManus.

"ARTIFICIAL CROWN AND BRIDGE WORK." By George Evans, D.D.S., New York. This edition, the sixth, in addition to the main features contained in the earlier issues, has a department devoted to porcelain dental art. The author is thoroughly conversant with his subject, and the book is to be heartily recommended. Price, \$3 net. S. S. White Co., Philadelphia.

TO OBTAIN DUPLICATES OF PLASTER MODELS.—Soak about 150 leaves of common gelatin in cold water for one or two hours, gradually adding four or five ounces of oil, constantly stirring. Place the model in an enameled vessel and pour the above mixture over it. After about three hours it will have hardened, when the model may be removed and any number can be poured. —*F. A. B. Dental Office and Laboratory.*

HIS AWFUL BLUNDER.—Singleton: Dr. Pellet is certainly the most absent-minded man I ever saw.

Wederly: Is that so?

Singleton: Yes; he was married last week and during the ceremony when he should have placed the ring on the bride's finger he actually felt her pulse and asked her to put out her tongue.—*Chicago News.*

"AMERICAN TEXT-BOOK OF OPERATIVE DENTISTRY." In contributions by eminent American authorities. Edited by Edward C. Kirk, D.D.S. This book covers its particular field very successfully, and we heartily recommend

it to students and dentists. New (second) edition, revised and enlarged. In one very handsome octavo volume of 837 pages, with 897 engravings. Cloth, \$6; leather, \$7. Lea Bros. & Co., Philadelphia and New York.

REGULATING NOT REMUNERATIVE.—In a recent case in which Mr. Glassington sought to recover a fee for regulating a girl's teeth, the judge summed up against him and said the parents need not pay as there was no specific contract, and that regulating teeth was not a "necessity." This decision should make us very careful before embarking in what often is the most tedious and unsatisfactory work we are called upon to do.—*Brit. Jour. D. S.*

MEDICAL EDITOR WANTED.—Dr. Walter L. Pile, of Philadelphia, advocates a medical member on the staff of the daily newspaper. He refers to a recent article in the *New York Herald* on "Sleep Cure for Nervous Diseases." The cure was stated to consist of "eight grains of bromin every two hours in a glass half full of water." "Rest—absolute prolonged rest—was the one thing which persons suffering from nervous disorders stood most in need of," and the advice, if followed, would certainly produce absolute and prolonged rest.

FRACTURE OF JAW FIRST SIGN OF TABES. **SABRAZES.**—A healthy working-woman began to suffer with intense toothache, the pains radiating through the head and face. The teeth and gums appeared normal in every respect, but she applied to a dentist to have the right cuspid extracted, from which she suffered most. As he pulled it, the entire alveolar process of the upper maxillary bone broke off with it, with all the solidly implanted, sound teeth. Two years later unmistakable symptoms of progressive tabes appeared.—*Jour. A. M. A.*

BUCCAL LEUCOPLASIA.—E. Gaucher. When the patch is smooth, Gaucher gently paints it once or twice a day with an aqueous 2 per cent solution of potassium bichromate. This treatment should be continued patiently, as instances have been known of a cure after three years. If the patch is papillomatous, the excrescences should be removed with the galvanocautery and the mouth frequently rinsed with a 10 per cent solution of magnesium chlorate. The patient should be kept under surveillance to detect incipient cancerous degeneration.—*Jour. A. M. A.*

ALCOHOL AS A DISINFECTANT.—Recent researches seem to show that absolute alcohol is devoid of all disinfectant properties, whereas proof spirit (50 per cent) gives more tangible results in this direction than either stronger or weaker solutions. Antiseptic substances which in aqueous solution are more or less active germicides, entirely lose this property when dissolved in strong alcohol; but, on the other hand, corrosive sublimate, carbolic acid, lysol, and thymol, dissolved in a 50 per cent solution of alcohol, disinfect better than aqueous solutions of same strength.—*Med. Press and Circular.*

QUESTIONS ANSWERED.—The postmaster at Bucyrus, O., recently received a long letter from a young dentist who wished to ascertain the possibility of his pulling out a comfortable living in that city. Among other things in his reply the postmaster said, "We have the best town in Ohio; a curfew ordinance; no taxes; free mail delivery; no need to stamp letters; a Republican

town and everything goes. Hickory nuts flourish in abundance, and the people crack them with their teeth. Thirteen dentists are already here and three more have rented offices and will move in. Come ahead."

NEW CURE FOR ASTIGMATISM.—An English weekly is responsible for the following gem: "In the public schools of some cities measures are taken, by presumably competent officials, to test the children's eyesight. A little boy came home one day, with the following note signed by the principal: 'Mr. Green: Dear Sir. It becomes my duty to inform you that your son shows decided indications of astigmatism, and his case is one that should be attended to without delay.' The father sent this answer the next day: 'Mr. Kershaw: Dear Sir. Whip it out of him. Yours truly, John Green.'"

ANTAGONISM BETWEEN COCAIN AND HYPNOTICS.—Carlo Gioffredi concludes from a long series of experiments: (1) That chloral hydrate is a decided antagonist of cocain, being able to counteract the action of doubly lethal doses given to a dog; (2) other hypnotics, such as paraldehyd, are likewise antagonistic to cocain; (3) the antagonism is complete, influencing all the important organic functions; (4) it is a one-sided antagonism, for cocain does not counteract poisoning by the hypnotics; (5) the antagonism is a mechanical one, similar to the antagonism between the hypnotics and strychnin.—*Giornale Intern. Sci. Med. Rec.*

PYORRHEA ALVEOLARIS.—The relation of Riggs' disease to general surgery is here noticed by Abbott, who believes that it is responsible for many conditions, such as putrid exudates, etc. He mentions a case where this has developed extensive inflammation and septic infiltration of the lymphatics and glands of the floor of the mouth, the throat and neck. In other cases it may produce antral disease, and he has heard of a case of cystitis which cleared up at once after the extraction of the diseased tooth. He asks what surgeon would allow his patient to take five or six drops of pus three or four times a day, yet this must be the case with sufferers from this disorder.—*Jour. A. M. A.*

RETRACTING SINGLE TEETH.—Recently I had to retract a superior right central. The appliance consisted of a strip of German silver of about twenty-seven gauge and an eighth of an inch in width. The central portion was made to pass over the labial surface of the malposed tooth, the ends resting against the palatine surfaces of the adjoining central and lateral. The right central was not only drawn into position, but space was at the same time provided for its accommodation. As the space between the left central and right lateral was increased, a new turn was given the strip so as to exert more pressure. However, new strips can be cut and shaped almost as quickly as the old one can be altered.—H. Knowles in *Items*.

MEDICAL TESTIMONY UNRELIABLE.—How unreliable a thing medical testimony very often is was excellently shown in a case that came up in California about a year ago. A woman was suing a railroad company for damages, she having met with an accident on a train of the defendant company, as a result of which a tumor had formed itself in her stomach, which, according to the testimony of her physicians, could not be removed. The doctors of

the railroad company also examined her and were compelled to corroborate the statements of the expert testifiers. Upon this evidence judgment was rendered in her favor to the amount of \$25,000. Two or three months later she gave birth to a little girl; and that was the only tumor she had ever had!

DIPLOMA MILL CONDUCTORS FOUND GUILTY.—James Armstrong, founder of the Illinois Health University, the Independent Medical College, the Metropolitan Medical College, etc., etc., was this month sentenced by the Federal Court to the county jail for one year and to pay a fine of \$500. Sentence against Thomas Armstrong, who was convicted, and John H. Randall, who pleaded guilty to the same offense, will be passed at the next term of court in March. The State Board of Health has been after these men for several years. During the evidence it was shown that the "college" was turning out "diplomas" at the rate of one thousand per year, and that one-tenth of the "graduates" never attended the institution nor had any instruction whatever from it.

CHINESE FOR "UNAVAILABLE"—According to the *Religio-Philosophical Journal*, this is the way MSS. are refused in China: "Illustrious Brother of the Sun and Moon! Look upon thy Slave who rolls at thy feet, who kisses the earth before thee, and demands of thy charity permission to speak and live. We have read thy Manuscript with delight. By the bones of our Ancestors we swear that never have we encountered such a Masterpiece. Should we print it, His Majesty, the Emperor, would order us to take it as a criterion, and never again to print anything which was not equal to it. As that would not be possible before Ten Thousand Years, all trembling we return thy Manuscript, and beg of thee Ten Thousand Pardons. See! my hand is at my feet, and I am thy Slave." Dental editors may profit by this.

QUICK WAY OF REPLACING BROKEN TEETH ON VULCANITE PLATE.—Dr. A. P. Gore showed a quick way of adjusting a tooth to celluloid or vulcanite, applicable to plates from which one or more teeth or a block are broken. He first cuts with an engine bur a well-defined mortice or groove, with deep undercuts in the plate to receive the pins of the tooth or block to be replaced, and fills the mortice and undercuts with fusible metal. Then, holding the plate wrapped in a napkin in the left hand, with a pair of pliers in the right hand the tooth is held near the flame of an alcohol lamp, while an assistant holds a blunt instrument in the same flame. When the instrument is heated it is placed upon the metal in the groove cut in the plate, which instantly is melted, and while in that condition the warm tooth with heated pins is pressed home. Firm pressure should be continued while the metal is cooling, to prevent shrinkage while cooling. The result is a tooth or block firmly attached to the plate, and is especially suitable for emergency cases. —*Cosmos*.

CURIOUS CONCEPTION.—A woman named Akroyd, says *The Barrister*, was tried before the Court of Queen's Bench in Dublin for refusing to produce a child which she had abducted. Some amusement was created in court when the prisoner was sentenced for six months, without hard labor, in Richmond prison, which is only for the incarceration of males. Carved in the stone-

work over main entrance to prison are the following words: "Cease to do evil, learn to do well." The commitment was the subject of the following lines:

In most earthly tribunals some harshness prevails,
 But the Court of Queen's Bench is both prudent and mild;
 It committed Miss A. to the prison for males,
 As the readiest mode of producing a child.
 How she'll do so surpasses conception to tell,
 Should she "cease to do evil, and learn to do well;"
 And if in six months, without labor confined,
 She produces a child, she'll astonish mankind.

CILIARY NEURALGIA OF PALUDAL ORIGIN.—By Dr. A. L. Orlofsky. The term ciliary neuralgia stands for attacks of pain in the region of the ciliary nerves that supply the eyeball with sensory fibres. There are two varieties of this affection, the secondary and the idiopathic. The former constitutes a fairly frequent symptom of various diseases of the eyeball, the latter is due to some general infection. The case reported here was of malarial origin, the patient being the author himself. In the course of an attack of malaria he was seized with a severe pain in the left eyeball. At first the pain appeared only on pressure upon the eyeball, and on examination no changes were found in the eye. The pain became acute, shooting, boring, and aggravated by light. There appeared lachrymation, a burning sensation in the eye, and painful spasmodic contractions of the eyelids. Applications of cocaine and various other remedies were tried, but in vain. Finally subcutaneous injections of quinin and of morphin were ordered, and the pain disappeared after the first injection. Five days later, the patient was seized with an attack of neuralgia of the teeth, and this also yielded quickly to subcutaneous injections of quinin. The writer concludes that the neuralgia of the eye, as well as that of the teeth, was due to malarial infection.—*Vratch*.

BARBER DENTIST.—It does not seem so long ago since the Strand barber went to prison. Now a Sydney newspaper tells us about Walter Thomas Scurrah, "hair-dresser and dentist," who has been fined £5 as an alternative to a month's imprisonment. The plaintiff, Riley's, evidence was to the effect that he called in defendant's brother's shop and asked to be shaved. Defendant attended to him, and while giving him a final brush up remarked that "he had a fine set of teeth." "Do you mind me looking at them?" defendant was alleged to have said, and receiving the necessary permission, suggested, after examination, that as they were a trifle "scurfy," he be allowed to clean them. Complainant being agreeable, defendant produced what appeared to be a stick, and after rubbing them over, asked witness to rinse his mouth. Riley then left the chair and handed a sovereign in payment for the shave and hair brush, regarding the teeth cleaning operation either as an act of charity or one of friendship. While waiting for his change he was shocked to hear Scurrah say, "Another 1s. 6d., please," at the same time intimating that his charge for cleaning teeth was £1 1s. Riley demanded his change, but was only given 5s. of the amount. The evidence

for the defence was that a card was suspended in a conspicuous place on which the prices were painted, and complainant must have noticed it, and, further, that he had instructed defendant to perform the scouring operation. The price-list put in as an exhibit bore the line "Teeth £1 1s."

TO CURE A CHILD OF STUTTERING.—The child that stutters must be gently, patiently and persistently corrected, stopped when he begins to hesitate, made to fill the lungs with air by a deep inhalation, and then to pronounce the difficult syllables until he can do so easily and smoothly. If this course is pursued undeviatingly cure is certain.—*December Ladies' Home Journal*.

INTRA-AURAL APPLICATIONS OF CHLOROFORM IN TRIFACIAL NEURALGIA AND HEADACHE.—Bose (*Indian Medical Record*, January 3, 1900) has obtained excellent results in trigeminal neuralgia and severe headache from the introduction just inside of the external auditory meatus of pledgets of cotton-wool well soaked in chloroform. The pledgets are covered with dry cotton-wool before being inserted. Within half a minute a burning sensation is excited, and as this increases the headache disappears. The writer concludes that this method of treatment rarely fails to give even temporary relief, and only twice aggravated the pain; that it is only palliative in neuralgias due to fever or dental caries and in some cases of inflammatory origin, but is curative in very many cases of inflammatory, reflex, and inexplicable origin, and in cases due to anemia, insomnia, and exposure to the sun or to cold; that it removes uncomfortable sensations from the trigeminal area, and is probably the best remedy for neuralgias in neurotic persons who can not bear internal medication. As one application usually cures pain that has lasted from a few hours to a few weeks in over 50 per cent of headaches and faceaches, the method ought to be the first tried in all cases.

THE ANTIQUITY OF MODERN SCIENCE.—From time to time glimpses come to sight of the light that really existed, far beyond what is commonly supposed, in the esoteric knowledge of the ancient world. Much of the teaching of the earlier books of the Old Testament is now seen to be in accord with some of the most advanced sanitary science. Professor Nophtuli Herz Imber, in the *Denver Medical Times* for April, gives an insight into the medical teachings of the Talmud, from which we gather that most ailments were even in those days supposed to be due to little dangerous organisms, termed "shedins" (destroyers), too small to be seen by the eye. These organisms were inhabitants of air, water, animals, and decomposed wood. Hogs and certain fishes were the creatures most infested by them. Leprosy was due to the presence of such organisms beneath the skin, and its origin was attributed either to eating certain fish or to wearing untanned hides. The ordinances which forbade spitting in the streets of Jerusalem, allotted four cubits of space to each dweller in a room, and prescribed the investigation of the lungs and livers of slaughtered animals, seem to indicate quite an up-to-date board of health some two thousand years ago, while the Talmudic admonition concerning flies as transmitters of disease, if better known, might have caused more respectful attention to be paid to the warning of the surgeon general in respect of flies and typhoid in our late campaign. *E pur si muove*, but always in an orbit.—*New York Medical Journal*.

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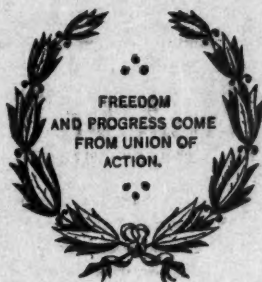
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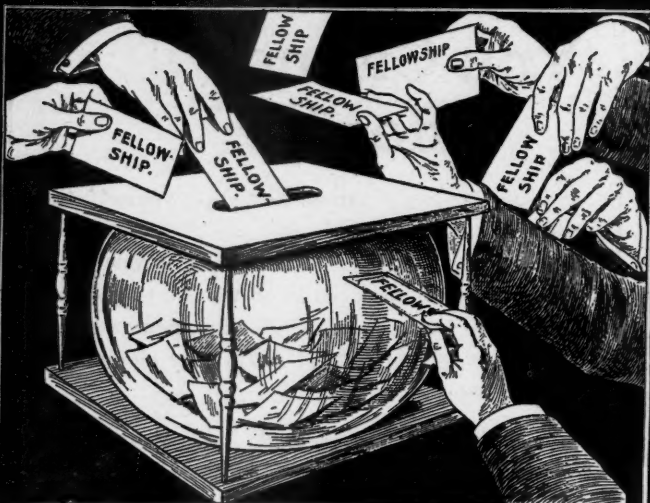
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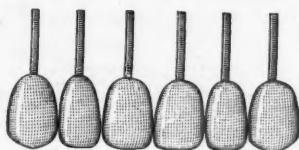
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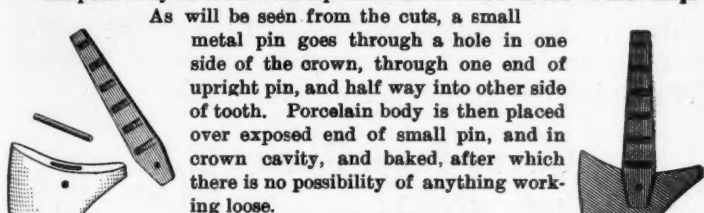
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In devising this crown we have overcome one radical defect possessed by most others. Nearly all other makers secure the pin in the crown by screwing it in, or by setting it with cement, gutta-percha, etc. The result is, that sufficient anchorage is lacking and very frequently the pin turns in the crown, ruining the work.

All possibility of such a mishap has been avoided in the "Fellowship."



As will be seen from the cuts, a small metal pin goes through a hole in one side of the crown, through one end of upright pin, and half way into other side of tooth. Porcelain body is then placed over exposed end of small pin, and in crown cavity, and baked, after which there is no possibility of anything working loose.

The pin is made of composition metal and is as pliable as platinum.

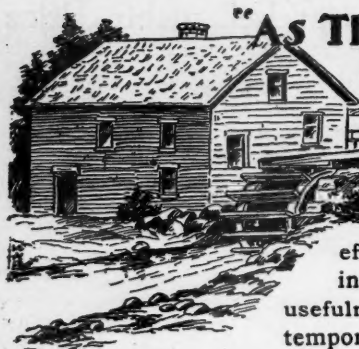
The crown is made from the same body as our "Fellowship" teeth, whose strength is well-known. Finally, the price is right. Why pay 60 cents for a crown when you can buy one just as good for 25 cents less?

	PRICE,	35 cents each	
✱	In \$10.00 lots,	30 " "	✱
	In 25.00 " "	25 " "	

The Dental Protective Supply Co.

1101 Champlain Building, CHICAGO.

BRANCH at 141 N. 11th Street, PHILADELPHIA.



**"As The Mill Cannot
Grind With
The Water
That Is
Past"**

so you cannot work effectively with dull burs and instruments, whose edges and usefulness are past. Send in all the temporarily disabled ones and let us renew them.

Hereafter our prices on repair work will be as follows: Our present high standard of workmanship will be maintained. The price only is lowered. We guarantee satisfaction or your money back.

**Cavity Burs, Recut
and Stoned.**

PER DOZ.

50c

In six dozen lots 45c

In twelve dozen lots 40c

Price per Dozen

Finishing Burs, recut and stoned **\$1.00**

Excavators Repointed 75c to **1.00**

Pluggers Reserrated **1.50**

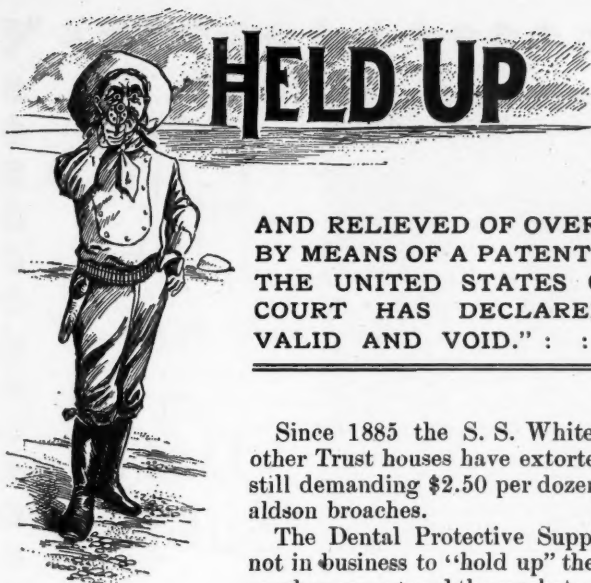
Nickel-Plating Done at Reasonable Rates.

Being manufacturers of handpieces, we are equipped to make a specialty of Handpiece Repairing.

The Dental Protective Supply Co.

1101-3 Champlain Bldg., - - - CHICAGO.

Branch at 141 N. 11th St., Philadelphia.



**AND RELIEVED OF OVER \$200,000
BY MEANS OF A PATENT WHICH
THE UNITED STATES CIRCUIT
COURT HAS DECLARED "IN-
VALID AND VOID." : : : :**

Since 1885 the S. S. White Co. and other Trust houses have extorted and are still demanding \$2.50 per dozen for Donaldson broaches.

The Dental Protective Supply Co. is not in business to "hold up" the dentists, so when we entered the market we sold the

"Fellowship," a broach equal in every respect to the "Donaldson," for \$1.00 per dozen. The S. S. White Co. sued us for infringement of the "Donaldson" patent, but instead of paying them damages we carried the matter into court and showed that their patent was not worth the paper upon which it was written, even though they had relieved the profession of over \$200,000 by means of it.

We or any other supply house can make a fair profit when retailing broaches at \$1.00 per dozen, so we would suggest that you ask the Trust houses why they have charged such an outrageous price during all these years, and also request them to return you the royalty collected under a bogus patent.

"Fellowship" broaches are put up in five styles—extra fine, fine, medium, coarse, assorted—and they sell for \$1.00 per dozen, \$5.50 per half gross, \$10.00 per gross.

In view of the fact that we have made it possible for you to buy broaches at a reasonable figure, do we not merit your trade in this line?

Dental Protective Supply Co.

1101 Champlain Building, Chicago.

Branch at 141 N. 11th St., Philadelphia.



A Little Light on a Dark Subject

The subject of "easy-working, slow-setting and plastic" alloys is a very dark one, for most of them are utterly unfit for use. We have, however, lightened the gloom with

"DUCTILE" ALLOY,

as in it we have satisfied the demand for a cheap yet reliable alloy. "DUCTILE" amalgamates readily and works easily, sets slowly, does not shrink and retains a good color. We guarantee it to be superior to all other plastic alloys, and can heartily recommend its use to practitioners seeking this kind of a filling material. "DUCTILE" is not so good as "FELLOWSHIP," but is better than any other \$1.50 or \$2.00 alloy yet offered for sale.

PRICE:

1 ounce	\$1.50	5 ounces.....	\$7.00
10 ounces.....	13.00	20 ounces.....	24.00

Dental Protective Supply Co.

1101 Champlain Bldg., CHICAGO.

Branch at 141 N. 11th St., Philadelphia.

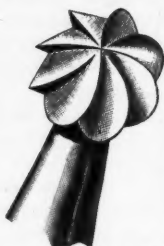
REDUCTION IN PRICE.

"Fellowship" Burs

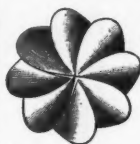
have come to the front, and now stand ahead of all competitors, because : : : :

THEY CUT FASTER AND CLEANER AND HOLD THEIR
EDGE LONGER THAN ANY OTHERS.

This is due to the fact that the twin or "dual" blades traverse the entire cutting surface of this instrument, and these burs **clear themselves** when in use, making rapid work possible. They **shave** and do not **grind** the dentin, so "painless dentistry" is possible with them. **Many of the best operators in this country and Europe use "Fellowship" burs in preference to all others,** because they



Patented Feb. 5, '95.



Patented Feb. 5, '95.

are superior in all respects. We know that you will be convinced of their merits if you give them only a trial.

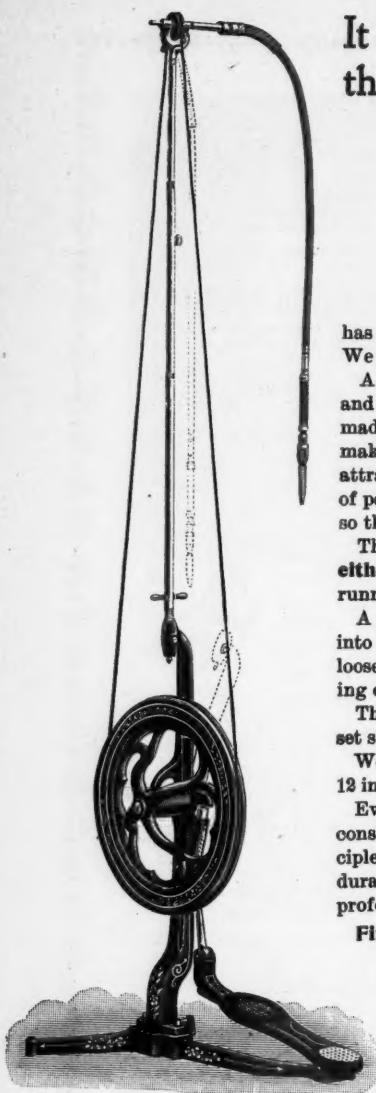
To show what care is taken in their manufacture, we would state that they are harder to cut and **cost more to make than any other burs on the market.** We always aim, however, to undersell our competitors, so now announce a substantial reduction. When these burs were first made their large sales forced our rivals to cut their price; let's see if they will meet these figures—Per dozen, \$1.00; per $\frac{1}{2}$ gross, \$5.50; per gross, \$10.00.

Made in all sizes and shapes, for universal and angular handpieces. : : : : :

Dental Protective Supply Co

1101 Champlain Building, Chicago.

Branch at 141 North Eleventh Street, Philadelphia.



PAT. OCT. 12, 1895

It Is Not An Accident
that the ❀ ❀

"Fellowship" Engine

has every engine virtue and no engine faults.
We make it so.

A new lot of 500 has just been completed, and in them a few improvements have been made, such as the dish-shaped wheel, etc., making this engine the most artistic and attractive in appearance of any. All points of possible weakness have been strengthened so that breakage is almost impossible.

The drop pulley-head has long bearings on either side of the wheel, which insure steady running and equal wear at all points.

A slight upward toss of the arm raises it into position, and pressure on the thumb-piece loosens it. This is the most convenient locking device on the market.

The standard can be raised or lowered by set screw.

Weight of driving wheel, 13 lbs.; diameter 12 in.

Every feature of the "Fellowship" engine is constructed upon correct mechanical principles, and it is the easiest running and most durable article of the kind yet offered to the profession.

Finally, the price is lower than that asked for inferior engines. We offer the "Fellowship" equipped with our universal handpiece, 14 instruments, oil can, flexible sleeve and engine arm support for

\$37.00

Dental Protective Supply Co.

1101 Champlain Building, Chicago.

BRANCH, 141 NORTH 11th STREET, PHILADELPHIA.



Guaranteed Mouth Mirrors.

Perhaps no other instrument is used more constantly than the Mouth Mirror. It is therefore necessary that this instrument should be always of the very best workmanship. Two or three points of superiority distinguish our product from the general run. In the first place, the glass for the lenses is selected with great care. Our Mirrors are mounted carefully in their frames, and so far as possible they are aseptic.

Instead of the old-time way of cutting a thread upon the handle, rendering the mirror extremely delicate at the point of greatest strain, our mirrors have a stiff, metal rod inserted in their handles. That's why our Mirrors never break. Finally, the price is lower than those of inferior make.

Nos. 1 to 6, Plain or Magnifying, **65c each**
White or Black Handles.....

DENTAL PROTECTIVE SUPPLY CO.

1101-3 Champlain Building - - - - CHICAGO

Branch at 141 N. 11th St., Philadelphia.



WATCH OUT

For the best
rubber dam, as regards
both quality and price, and you
will soon see ours.



Thin, Medium, Corrugated (Medium), 6 inches wide, 5 ounces to roll, -	\$1.00
Heavy, 6 inches wide, 7½ ounces to roll, - - - - -	1.50
Kleinert, (a Light-Colored, Superior Dam), 6 inches wide, 5 ounces to roll, - - - - -	1.00
7½ ounces to roll, - - - - -	1.50
Also Kleinert's Handy Squares, 24 sheets, 6 inches square, per box,	1.00

Compare these weights with
what you are now getting. As
for the quality, we will guar-
antee all dam sold by us.

Dental Protective Supply Co.

1101 Champlain Building, CHICAGO.

Branch at 141 N. 11th St., Philadelphia.

THE PROBLEM SOLVED.

At present angular handpieces are not satisfactory; first, because the price is too high, and second, because they are continually breaking or getting out of order, thus causing frequent expense and trouble. The trouble has come from the fact that the proper combination of gears, which would give all the required angles and yet be strong enough to withstand the great strain, was not found. In our new

"Fellowship" Angle Attachment and Angular Handpiece

we have solved the problem, and now guarantee them to require less repair and to outwear any others on the market.

The Angle can be attached to our "Fellowship" handpiece, or to the "No. 6" or "No. 7"; and the Angular Handpiece can be used with our own or with any standard of slip-joint.

The bur can be held at either an acute, right or obtuse angle, thus giving all positions desirable or possible.

Handpiece.

The Angle Attachment which we put out some time ago was designed to take the "No. 2" right angle burs, but in some cases considerable difficulty was caused by the fact that the different makes of burs varied in size of both fit and shank, thus interfering with the delicate mechanism of the gears.

We have therefore made the present instruments to take a bur with groove in shank by which it is held. If you have a stock of "No. 2" angle or of Davis burs on hand, we will, **without charge**, fit them to our Angle.

Attachment.



PRICES:

Angle Attachment,	-	-	\$7.00
Angular Handpiece,	-	-	7.50
Burs, per dozen,	-	-	1.00

Dental Protective Supply Co.

1101 Champlain Building, Chicago.

BRANCH AT 141 N. 11th ST., PHILADELPHIA.

Four Points

wherein our "FELLOWSHIP" slip-joint is superior to all others:



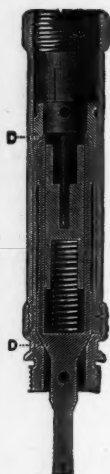
First—It is universal and will fit any handpiece.



Second—The locking device is simplicity itself and there is no cumbersome catch to hinder and annoy you.



Third—It is cheaper. Price complete (parts A, B, C), \$6.50. Extra Sheath (A), 75 cents. Extra dog (C), 25 cents.



Fourth—It will last a lifetime, as the wear can be taken up. All other slip-joints might as well be thrown away when they start to wobble, but in ours the wear can be taken up. Notice the cone bearings at D, a feature possessed by ours alone.

DENTAL PROTECTIVE SUPPLY CO.

1101-3 Champlain Building,
CHICAGO.

Branch at 141 N. 11th St., Philadelphia.



We Have Awakened

the dental profession to the fact that a thoroughly reliable alloy is possible. Before we put out "FELLOWSHIP" in 1897 there was not an alloy on the market fit to put into the mouth. The alloy manufacturers did not care to incur the trouble and expense necessary to produce a reli-

able article, and the dentists had no redress except to give up the use of amalgam, which many of them did. "FELLOWSHIP," however, revolutionized this field of dental labor, and "FELLOWSHIP" QUALITY IS TO-DAY THE STANDARD BY WHICH ALL OTHER ALLOYS ARE MEASURED. Let us show a few causes why our product to-day stands at the top.

It never shrinks, but always expands .0005 to .0010 of an inch.

It does not blacken the hand nor discolor in the mouth.

It possesses remarkable edge strength, and resists several times the pressure under stress and flow of any other alloy.

It sets rather quickly and becomes very hard in a short time, so the filling can be finished at one sitting.

Last, and perhaps most important, it is always uniform, as Dr. J. N. Crouse personally tests every lot and guarantees it to be perfect before we offer it for sale.

We were the first manufacturers who tried to give you an honest article, and "FELLOWSHIP" was the first tested alloy ever put on the market. Despite the attempts of our numerous imitators it to-day stands without a rival. Our highest aim is to always keep it at the top, and you need have no fear of its quality ever deteriorating.

IMPORTANT Any dealer who offers you "FELLOWSHIP" at one cent less than our prices is trying to palm off some spurious imitation, for every dealer is under contract not to cut the price. Beware of imitations, as we make the only "FELLOWSHIP" alloy, and it is never sold except under our name.

PRICE: { \$3.00 per ounce. \$22.50 per 10 ounces.
12.50 per 5 ounces. 40.00 per 20 ounces.

DENTAL PROTECTIVE SUPPLY CO.

1101 Champlain Bldg., Chicago.

Branch at 141 N. 11th St., Philadelphia.



A Safe Pilot.

Said the Government Examiner to Pilot O'Hagan: "Do you know where all the shoals and bars in the Mississippi River are?"

"Fa'h, Oi do not," said O'Hagan; "Oi know wherethey ain't."

So with us. We don't know why other makes of teeth fail to give satisfaction, or why

other manufacturers have put the price of their teeth up beyond reason, but we know one kind where "they ain't" any cause for complaint, either as to quality or rate.

We are now, as always, away behind other dealers—in price, but are up to par in quality. We offer you not only the cheapest teeth on the market, but the best. They have just as large platinum pins, are fully as strong, and are equal in every respect to any you have used.

We regret exceedingly that it was necessary to raise on our teeth, but platinum now costs us one-third more than it did two years ago, so that we were losing money at the \$1.00 rate. We are content with a living profit and have based our rates with that idea in mind. Compare our prices with some of the bigger houses.

"FELLOWSHIP" PLAIN RUBBER AND GUM TEETH.

Per set of 14 . . . \$1.40	19 sets \$25.00
40 sets \$50.00	84 sets \$100.00

DENTAL PROTECTIVE SUPPLY CO.

1101 Champlain Building, Chicago.

Branch at 141 North 11th St., Philadelphia.

DENTAL TRUST FAILS.

The dealers in Dental Supplies who belong to the Combination, and who claim that their organization is a friend of and benefit to the Dental Profession, recently tried to make you pay fifty per cent more for gas than you had been formerly. On August 1 they raised the price of gas from 2 cents per gallon to 3 cents, that is, from \$2.00 per cylinder of 100 gallons to \$3.00. On November 1 they lowered the price to 2 cents per gallon or \$2.00 per cylinder.

Now, understand, the advance was not made because it cost these firms any more to make or to buy gas, and the drop was not brought about by any decrease in cost of manufacture. The Trust simply thought it had a monopoly on gas and might as well squeeze \$3.00 out of the dentists as \$2.00, so the thumb-screws were applied.

Their attempt, however, failed ignominiously, and why—because the Dental Protective Supply Co., which is not in the Combination and which is utterly and unalterably opposed to Trust methods, continued to sell gas at 2 cents per gallon after the Trust had raised the price. The result was that the Combination dealers found their gas trade all slipping away from them, and we found ours increasing by tremendous strides. They, therefore, concluded they could “afford” to sell gas at 2 cents per gallon, and so restored the price to the old figure.

Where would the dentists have been if this company had not been in existence? A better illustration of the value of competition can hardly be imagined. After thinking the matter over, who do you believe deserves your support—the dealers who desire commerce without competition, or the house which endeavors to temper the Trust despotism.

Dental Protective Supply Co.,
1101 Champlain Bldg., - - CHICAGO.
Branch at 141 N. 11th St., PHILADELPHIA.

A Weighty Argument

PRICE:

\$2.00



The best results in mixing alloy can be obtained only when the correct proportions are secured. ("Fellowship" alloy requires seven grains of mercury to five of alloy.) We therefore offer this little scale, which can also be used for weighing precious metals, drugs, etc.

The arrangement of the pan makes the scale absolutely accurate, and the capacity is from $\frac{1}{4}$ to 24 grains. It is handsomely nickel-plated and very simple in construction.

DENTAL PROTECTIVE SUPPLY CO.

1101 Champlain Building, Chicago.

Branch at 141 N. 11th St., Philadelphia.

Wants, For Sale, Etc.

Do You Want to Buy?
Do You Want to Sell?
Do You Want an Assistant?
Do You Want a Position?
Do You Want Anything?

We charge 5 cents per word or initial, including head and address, for this sort of advertisements. They should reach us by the 10th of each month to insure insertion in that month's issue, and they are invariably payable in advance.

Those who have advertised their "Wants," "For Sale," etc., in the DIGEST have had most satisfactory results. Our intention is not, of course, to complete deals. We simply furnish the medium to reach the greatest number of dentists at the least cost, 5 cents per word, and here our responsibility stops. No postage is charged for forwarding replies.

DENTAL DIGEST,

2231 Prairie Avenue, Chicago.

THE ANGLE SCHOOL OF ORTHODONTIA,

For the fitting of teachers and specialists in orthodontia. Two short sessions are held each year, beginning November 1 and May 1. Post-graduates in dentistry, and only those thoroughly ethical, received. Class limited to 15 members.

For information address,

EDWARD H. ANGLE, M.D., D.D.S.,
1107 North Grand Ave., St. Louis, Mo.

FOR RENT.—Established dental office, two-room corner suite, Monroe Ave. and 55th St., Chicago. Best location on the South Side. Exceptional opportunity. Price, \$15.00. WILLIAM H. CARTER, 314 E. 55th St., Chicago.

FOR SALE.—A seventeen years' successful established advertising practice and good outfit, located in the most popular city in the country. Price will be only the amount of one year's income. The health of proprietor is the only reason for change and retirement. Address, SUCCESS, care of the Dental Digest.

Looking for Extra Values in Second Hand Engines?

Let us send you prices
and description of several
bargains we have on hand.

Dental Protective Supply Co.,
1101-3 Champlain Building,
CHICAGO.

50 YEARS' EXPERIENCE

PATENTS

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DESIGNS
COPYRIGHTS &C.**

Anyone sending a sketch and description may quickly ascertain our opinion free whether an invention is probably patentable. Communications strictly confidential. Handbook on Patents sent free. Oldest agency for securing patents. Patents taken through Munn & Co. receive special notice, without charge, in the

Scientific American.
A handsomely illustrated weekly. Largest circulation of any scientific journal. Terms, \$3 a year; four months, \$1. Sold by all newsdealers.
MUNN & Co. 361 Broadway, New York
Branch Office, 625 F St., Washington, D. C.

PATENTS

Quickly secured. **OUR FREE DUE WHEN PATENT OBTAINED.** Send model, sketch or photo, with description for free report as to patentability. **48-PAGE HAND-BOOK FREE.** Contains references and full information. **WRITE FOR COPY OF OUR SPECIAL OFFER.** It is the most liberal proposition ever made by a patent attorney, and **EVERY INVENTOR SHOULD READ IT** before applying for patent. Address:

H. B. WILLSON & CO.
PATENT LAWYERS,
Le Drott Bldg., WASHINGTON, D. C.

The Philadelphia Optical College
C. H. Brown, M. D.
Pres't.

1022 Walnut Street, Philadelphia, Pa.

Our suggestions will open to dentists a new and attractive field which they can cultivate with pleasure and profit. On account of the intimate relation between the eyes and the teeth, there is a peculiar fitness in the combination of **DENTISTRY AND OPTOMETRY** and each will stimulate the other in the increase of practice.

The ultimate aim of all is to make as good a living as possible, and there is no doubt the addition of Optometry would be a profitable investment; it offers every advantage without any disadvantages.

You may be unable to come here for instruction, but our famous Correspondence System (now in its twelfth year of increasing success), is a marvelous method of teaching, and appeals particularly to you.

If interested, send 5 cents to the address as above, for our elaborate Booklet, which contains "The Key to Success in Optics," and much valuable information.

EUGENE FIELD'S POEMS A \$7.00 BOOK

The Book of the century. Hand-somely illustrated by thirty-two of the World's Greatest Artists.

Given Free

to each person interested in subscribing to the Eugene Field Monument Souvenir Fund. Subscribe any amount desired. Subscriptions as low as \$1.00 will entitle donor to this daintily artistic volume,

"**FIELD FLOWERS,**" (cloth bound, 8x11), as a certificate of subscription to fund. Book contains a selection of Field's best and most representative works and is ready for delivery.

But for the noble contribution of the world's greatest artists this book could not have been manufactured for less than \$7.00.

The fund created is divided equally between the family of the late Eugene Field and the Fund for the building of a monument to the memory of the beloved poet of childhood. Address

Eugene Field Monument Souvenir Fund,
(Also at Book Stores) 180 Monroe St., Chicago

If you also wish to send postage, enclose 10 cts

Mention this Journal, as Adv. is inserted as our Contribution.

Happy Thought Local Anesthetic

SAFE, RELIABLE, INEXPENSIVE, NON-SECRET.

DOCTOR:—I am a dentist like yourself, have used cocain compounds from private formula and proprietary put-ups since so-called painless extracting came in vogue. My patients demanded it. From its use I have had alarming cases—so have you. We both know all about the risk. "Happy Thought" contains no cocain, carbolic acid or other injurious ingredients, does the work side by side equally well with ANY preparation of not over 2 per cent cocain; no better—good enough considering it can be used freely and without fear. "Happy thought" is safe—comes to you direct and therefore at about half the cost of the cocain articles—unsafe. Prepaid in United States, Canada or abroad.

Price, 1 oz. 60 cts.; 2 oz. \$1.00; 6 oz. \$2.50. Money returned without question if YOU do not get results claimed.


Fraternally,

C. W. STUTENROTH, D.D.S.,

First ounce only one address 50 cts. in stamps.

100 Kemp Ave., Watertown, S. D.

OUR SPECIALTY



TEETH.

A
ONE
CENT
POSTAL

Will Bring Price List

NEW STANDARD PIN -

STANDARD PINLESS -

TWENTIETH CENTURY -

ROYAL PLATINUM PIN -

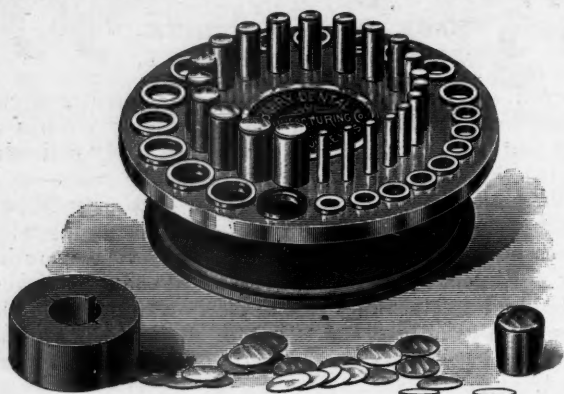
STANDARD TOOTH CO.,

C. W. Munson Agent, Toledo, Ohio.

Order of Your Nearest Dealer

IF YOU CAN'T GET THESE TEETH
OF DEALERS ————— WRITE US

THIS CUT IS DECEIVING YOU!



It leads you to think that our tools are the same in principle as all others, only a little different form. The tools and system are different from anything else ever put on the market.

WHAT MAKES THE DIFFERENCE?

HERE IT IS!

We do not use a stereotyped form of cusp and dies for forming the cusps, because each crown is made to have its own individuality just the same as each set of artificial teeth are made for the mouth to which it belongs. We do not work from an impression of the root which is inaccurate at the best. We make an actual fit to the prepared root and outline of gum, no guess work, and the crown is reproduced from this. We do not guess at length, contour, shape of cusps or the line of the gum; all of these are accurately reproduced. We do not reproduce a crown which is the thickness of the gold larger than the root. Our method gives exact fit, nothing larger or smaller.

WHY ARE OUR TOOLS DIFFERENT FROM OTHERS?

To say nothing of material, workmanship and designs.

HERE IS THE DIFFERENCE.

The variation of size from one punch to the other is so slight that you can always find a size to correspond to the prepared root. The tools are made for this system of crown work, and while others will make a seamless capsule, none will give you the range of useful sizes that ours do.

THE CASTING RING

is a part of this system, and while it can be used to good advantage by those already having drawing dies of other make, it is an all essential part of this system of crown making.

THE FUSIBLE ALLOY

is not the same as all others. It is a combination of metals which have the property and all important features of breaking sharp and clean like plaster of paris, and bears the same relation to other fusible alloys as does plaster to wax as regards taking impressions. It must break sharp in order to go back into place in the casting ring.

OUR BOOK OF INSTRUCTIONS

is free for the asking. Read it and be convinced that we have a different article and system of crown making as compared with anything heretofore on the market.

PRICES

Complete outfit, consisting of twenty-two drawing tools, one casting ring, one ingot fusible metal, a supply of copper disks and an illustrated book of instruction.....

\$15.00

SEPARATE PARTS

Drawing Dies.....	\$12.00
Casting Ring.....	1.50
Fusible Alloy, 4-oz., Ingot.....	1.00
Copper Disks, per 10050

BERRY DENTAL MFG. CO., 422 Milwaukee Street, MILWAUKEE, WIS.

For sale by Dental Protective Supply Co.



Pat. Apr. 2, 1889



Fig. A.



Fig. B.



TO



TO



TO



Meister's Dental Matrices.

The large size cut shows how the bands are attached to the Screwing Device, in which you can fit any band from No. 1 to 21. Turn screw on Fig. A, it will close like on Fig. B.

Price set No. 1, Screwing Device.....	\$1.25
Price 7 Bands, edges polished, No. 1 to 7.....	50
Price Wooden Lined case	25
Price set No. 2, Screwing Device	1.25
Price 21 Bands, polished edges, No. 1 to 21.....	1.50
Case.....	25

Rubber-Dam Clamps
Especially.

C. MEISTER & CO., Mfrs. of Dental Instruments, 726 Union St., ALLENTOWN, PA.

The HAMMOND SECTIONAL ELECTRIC FURNACE.

For 110 Volts Direct Current. Also for Alternating.



Fig. 1.



Fig. 2.

Among the inlay furnaces now on the market, The Hammond Sectional marks an entirely new departure.

GREAT DURABILITY.—It combines the utmost simplicity of construction and operation with a durability and efficiency not approached by any other furnace at present before the dental profession.

DOES NOT BURN OUT.—The liability to burn out or short circuit has been almost absolutely eliminated.

INTENSE HEAT.—Owing to the improved method of wiring, this furnace produces the highest degree of heat ever attempted in a platinum-wound furnace.

PERFECT CONTROL.—It is under the most perfect control of the operator, so that he is able to secure just the degree of heat necessary to do the particular work in hand.

SECTIONAL FEATURES.—The working parts of this furnace are interchangeable, so that in case of accident they may be removed and replaced in the shortest time.

TWO COMPLETE FURNACES IN ONE.—In purchasing a Furnace, you secure an extra platinum-wound muffle which is included in the price; therefore in case of accident you need not be delayed even to repair the break at the time, for by simply changing the muffle you are enabled to go on with your work, with hardly an interruption.

Price of Furnace complete, including extra Muffle.....	\$35.00
Price of Muffle alone	8.00
Price of Muffle in exchange for old one.....	4.00

Manufactured by **JOHN F. HAMMOND,** 35-43 West 125th St., NEW YORK, N. Y.

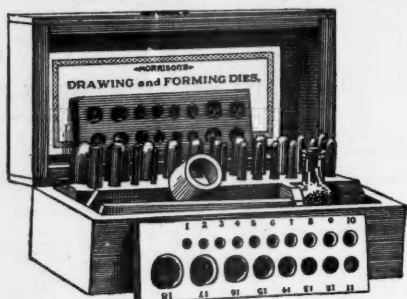
Antiseptic Dental Floss.

It is charged with a preparation of silver salts well known to arrest decay of the teeth.

The silver is introduced in such form, and the silk so holds the preparation, that it is taken up by the moisture between the teeth in the daily use by the patient sufficiently to arrest decay. See DENTAL DIGEST April 1900, p. 256. It is agreeable to use and without injurious results. The advantage is readily understood—mechanical cleansing combined with effectual antiseptic treatment. The benefits of its use are well attested in many cases.

Put up in dozen and half dozen boxes; coarse, medium and fine—\$3.00, \$2.75 and \$2.50 per dozen spools. Prepared by the request of members of the profession under the direction of

EDWARD S. NILES, D. M. D.,
561 Boylston St., BOSTON, MASS.



MORRISON'S Improved Seamless Crown Outfit

Makes Seamless Cap Crown
of Good Form, Perfect Fit
and Perfect Occlusion. . . .

Send for Circular.

Price . . . \$13.00

J. H. MORRISON,
Connersville, Ind.

By the use of special machinery I am enabled to make a circular brush for the dental engine, which is smaller and thinner and at the same time stiffer than any heretofore made.

It is practically **an entirely new device.**



DR. ROBINSON'S BRISTLE DISCS.

FOR DENTAL CLEANING AND POLISHING.

The only device that will reach and polish that stronghold of tartar, the lingual surface of the lower incisors.

Parts inaccessible to ordinary points and buffers are readily reached with these discs, and more effective cleaning and polishing can be done with them in five minutes than with usual devices in an hour.

For Sale by Dental Depots generally.

Free samples to dentists upon request by mail.

Foreign correspondence solicited.



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FOR

Sterilizing the Mouth and Hands, Bad Breath, Sour Stomach.

MILLER says: "The saliva of cattle, sheep, dogs, rabbits, etc., is essentially strong in alkaline reaction." If human saliva was the same we no doubt would be as free from diseased teeth and gums as they. "Vegetol" cleans perfectly but does not abrade, renders the saliva alkaline, neutralizing acids, sterilizes the mouth, and assists digestion.

Send for sample, also booklet on the subject,
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THE VEGETOL COMPANY,

SOLD BY DRUGGISTS.

11 E. Seventh St., CINCINNATI, O.

The New Dunn Antiseptic Syringe No. 4.

No Medicament in the Bulb.

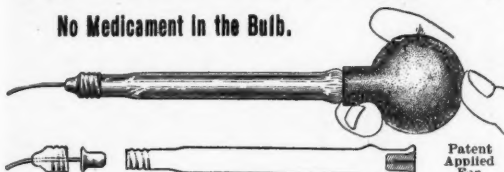


Fig. 1.

Fig. 2.

bulb, sufficient to operate the Syringe, and the elasticity of the rubber causes it to close as soon as the finger is removed from the opening in the bulb. J. AUSTIN DUNN, D.D.S., 901 Marshall Field Bldg., Chicago, Ill., U. S. A.

From 1 to 40 minims can be used in this Syringe, as desired. The ball bulb gives all the force necessary. PRICE, \$1.25.

Fig. 2 shows the soft rubber valve in the bulb end of the barrel, which prevents the liquid from getting into the bulb. The perforation in the valve opens only under pressure of air from the

Patent
Applied
For.



Made in sizes
 $\frac{3}{4}$, $\frac{5}{8}$ and $\frac{1}{2}$
inches.

PRICE

10c each

\$1.00 PER DOZ.

HULL'S CARBO DENTAL DISK

Makes Crown and Bridge Work Easier.

It is a thin disk about $\frac{1}{1000}$ of an inch in thickness, cutting on edge and sides both dry and wet, without rapid wear or glazing.

ITS USES.

Separating and shaping-up teeth for crown and bridge work, grinding Logan crowns, porcelain facings, etc.

If your local dealer does not supply you, I will send post-paid on receipt of price.

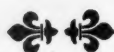
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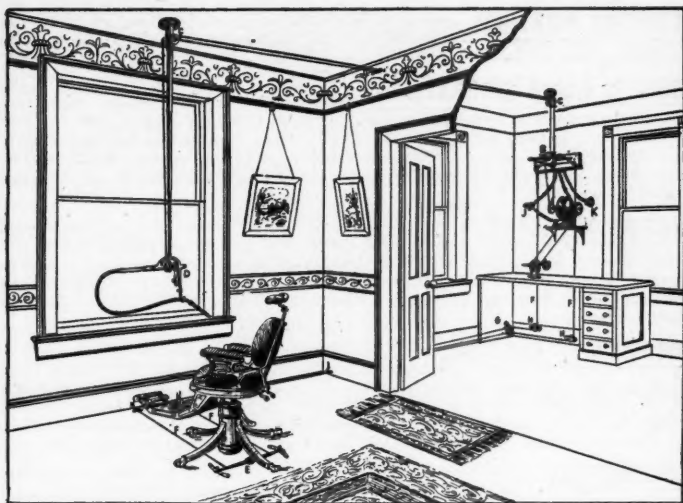
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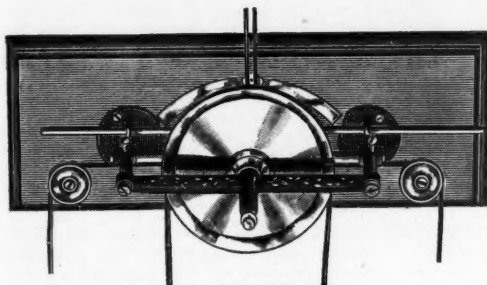
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L. J. MASON & CO'S
ALTERNATING CURRENT OUTFIT



Speed Regulator and Reverser.

With the device here shown a dentist can have as complete control of his engine as by use of the direct current. He can use the same motor to run his lathe.

Outfit complete, with ordinary engine head - - - - \$ 90.00
Outfit complete, with air pump and pneumatic mallet - - - 110.00

A dentist may use his own engine head, cable, sleeve and handpiece, and save \$20.00, making balance of outfit cost only \$70.00. We have similar outfit for 110 volt direct current, costing \$10.00 less.

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2,000 Tapestry Paintings to choose from. 38 Artists employed, including Gold Medalists from the Paris Salon. Special designs for special rooms furnished.

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We can show you effects NEVER before thought of and at moderate prices, too. Write for Color Schemes, Designs, Estimates. **ARTISTS SENT TO ALL PARTS OF THE WORLD** to execute every sort of Decoration and Painting. We are educating the country in Color Harmony. We supply everything that goes to make up the interior of a home—Stained Glass, Relief, Carpets, Furniture, Parquetry, Tiles, Window Shades, Art Hangings, Draperies, etc.

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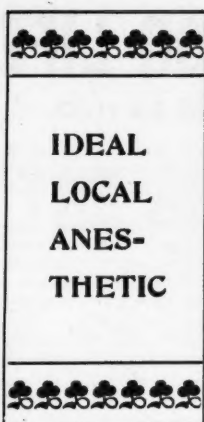
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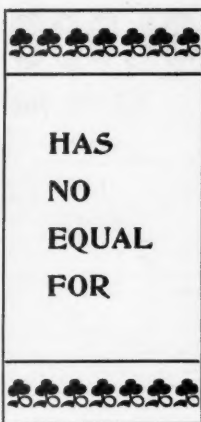
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Put up in one ounce bottles hermetically sealed.

"Be not the first by whom the new is tried nor yet the last to lay the old aside."

Price, 1 oz. 75 cents; 5 ozs. \$3.00; 10 ozs. \$5.00. Sold direct to dentists only. Reference if desired.

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\$1,000 A YEAR FOR LIFE

SIX PER CENT INTEREST GUARANTEED FOR SIX YEARS.

A thorough investigation will convince you that \$12.50 per month invested in the Montezuma Plantation will give you an income of \$1,000 for life. It will convince you that the enterprise is *not a speculation*, but a solid, conservative investment, in which *the organizers*, to make their profit, *must make a success for the investors*.

The plantation consists of 6,000 acres and is being planted to rubber, sugar and coffee. Precisely 6,000 shares will be sold, each representing an acre in the form of an undivided interest. The interest of one is the interest of all. The company contracts to cultivate the entire tract for seven years and bring it to complete maturity. For this it charges \$300 an acre and makes its profits right there. The \$300 is paid in 72 installments, \$2.50 per month for 36 months; \$4.00 for 12 months; \$6.00 for 12 months and \$7.50 for 12 months.

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The Mexican Coffee and Rubber Growers' Association has a capital of \$5,000,000, a guaranteed treasury fund for land development purposes exclusively of \$750,000 and it owns 100,000 acres of the choicest land in Mexico. Its assets are valued at \$4,000,000 and its stock is worth par. This company is developing the Montezuma plantation and makes a contract direct with each shareholder in the same.

EACH MEMBER ONLY ONE VOTE—NO CHANCE TO FREEZE OUT.

The shareholders of the Montezuma are a co-operative association, not a stock company; in the latter the small investor is powerless. To absolutely and forever prevent any clique or the management from taking any unfair advantage, it is provided in the contract that each shareholder shall have only one vote, regardless of the number of shares held.

CHICAGO TITLE AND TRUST CO., TRUSTEE.

In addition to holding the title to the land, this well-known institution, capital \$1,500,000, receives every dollar paid by the investors and disburses it according to the terms of the trust agreement.

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Not one of all the authorities on the planet places the profit on rubber and sugar at less than 50 per cent—most all at 100 to 200.

Sir Thomas Lipton says: "For sure, large and permanent returns nothing equals a well managed tropical plantation." He has been paying the stockholders in his Ceylon plantations enormous dividends for years. Spreckles is making millions from his sugar plantation in Hawaii.

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The company manages for 25 years for 10 per cent. of net profits. The shares are non-forfeitable after three years' payments have been made. If the purchaser dies during the life of the contract the amount paid will be returned. The shareholders will annually elect an inspector to visit the land and excursions will be conducted. Many well-known business and professional men have taken share and indorsed this enterprise. There are no fines or assessments. We invite the closest investigation. Call and talk it over or write for literature.

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A WATER MOTOR DENTAL ENGINE, and a good one, too—so our users say. Not one of those old rattle-trap motors that drive you out of your office with noise, but a motor built on entirely new principles. It is **noiseless, durable, and "pulls hard"** for its size. The valve is the controller, and you can turn on a little water and run slowly, or more water and run fast. Stop, start and reverse by pressing the heel or toe of our foot-switch, which is connected with the controller by a continuous wire cable. The impulse

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Universal Pulleys.



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TRY a Platinoid Crown Pin in the next Crown you make. Any Carat Solder can be used. We have them in three sizes.



They can be used for making Richmond and other crowns.

The thread on the Pin holds the Cement. If, by accident, the porcelain should break, the pin can be easily removed from the root by unscrewing it. They can also be used in putting on a Gold Crown where only a small portion of the root remains. Screw one in the root, let the end project far enough for the Cement to get a good grip on the Pin. Can be used to anchor Gold or Amalgam Fillings, extracting roots, etc. Be sure and brighten the Pin after soldering. **\$1.00 per dozen.**

Also Plate, Screw Posts, Explorers, Wire for regulating, etc.

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DENTAL PROTECTIVE SUPPLY CO.

"THE BEST STRIP MADE."

Dr. Howard's Dental Finishing Cloth Strips.

Made in four grits—Coarse, Medium Coarse, Medium, Fine, and in three widths—Broad, Medium, Narrow. Put up mixed or separate, as desired, in boxes containing an amount equal to one gross, of medium width, seven inches long. Send for them if your dealer does not keep them.

Manufactured only by

CHAS. T. HOWARD, ROCHESTER, N. Y.

**OBTUNDING PASTE, SENSITIVE DECAY
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Sensitive teeth can be excavated absolutely without any pain. And in pulpitis, after cutting away the decomposed portion, cap the remaining live pulp, with the assurance that it will remain alive and healthy.

Formula: Zinc Oxid, Paraform, Thymol, Petroleum, Alum and Oil of Cloves.

PRICE, \$1.00.

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Dentists' Office Coats

Made for medical men
for professional work in a
variety of styles of light
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They are neat and dressy
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White Drill, - - -	\$1.25
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Samples of material
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Goodrich Twilled Dam.

The Finest Dam Yet Produced.
Very Tough. Very Dry.

DOES NOT TEAR AS EASILY AS THE SMOOTH!
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DENTISTS—Send for a piece to try.

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OVER TEN YEARS' STANDING WITHOUT A SINGLE FATALITY.

Write for our Special Terms.

Odontunder is Guaranteed to Give Perfect Satisfaction.

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Odontunder Mfg. Co., Fredonia, N. Y.:

Dear Sirs—Please send me by return U. S. Express \$10.00 worth of Odontunder. I enclose check for same. It is working fine.

Very respectfully,
S. J. DOWNS.

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Dear Sirs—Please ship me a \$10.00 lot of Odontunder at once, C. O. D., and oblige, Yours very truly,

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P. S.: I find that no other local anesthetic can do the work so well as Odontunder.

Odontunder will not deteriorate. Every bottle guaranteed. Cash to accompany order of goods sent C. O. D.



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So generally is Odontunder used that we guarantee to send you the name of some friend or classmate who is using it, with whom you can correspond.

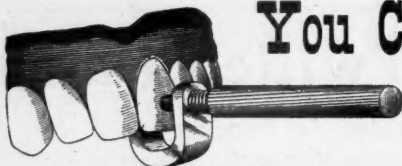
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Holds all facings securely for Crown and Bridgework, as well as the six anterior rubber teeth while grinding and fitting the tooth to the cast, without removal. When pins run up and down, put in tooth crosswise. Also, when pins are close together, place in on one side and steady with the thumb. Splendid for holding tooth while burnishing backing. Vulcanite tooth fits in groove crosswise of clamp.

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FORMALDEHYDE-PASTE

Will preserve the pulp when exposed or covered by a thin layer of dentin—an invaluable preparation in all cases of deep caries. The paste can be applied even if the *pulp* has been *bleeding*, and permits *immediate filling* of the cavity.



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Formaldehyde-Paste.

Put up in tubes. No mixing required. Applied directly from tube to cavity. Always effective. Full direction with each package. Literature sent on application.

JODOFORM ROOT-FILLING

Consists of a slowly hardening artificial dentin mixed with oil of cloves, carbolic acid and 20 per cent jodoform. The consistency of the paste allows to work the needed quantity into a cone shaped form, suitable to be introduced into the pulp canal. Here it remains—a constant disinfectant. The preparation does not stick to the instrument, and the operation can be performed in two minutes.



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Does not cause any pain, and acts promptly in 24 to 48 hours, when pulp can be extracted painlessly.

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For sale by all leading Dental Depots.

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THE CONTOUR SEAMLESS DENTAL GOLD CROWN SYSTEM.

No Practitioner of Dentistry can well afford to be without it; and when once used its merit will be fully appreciated.

From a gold disc (of varying sizes according to the case), Seamless Gold Crowns can be manufactured with great ease and dispatch.

Any metal that is used for dental purposes, such as Platinum, Silver, Nickel, Aluminum, can be formed into a Seamless Crown, corresponding in shape to any natural tooth.

No other known system has such great advantages for making Seamless Crowns, also Seamless Root Capping for bridge work.

The best English steel is used in the manufacture of this system.

The progressive practitioner will find this outfit to be invaluable as well as indispensable.

THE MOST INEXPERIENCED CAN HANDLE IT.

But a very few minutes required to make these Seamless Crowns, for any given cases.

It not only has great merit for Seamless and Contour Crowns for Bridgework, but is equally as good for making Seamless Caps for any method of Porcelain cases, such as Richmond's, Davis' and Mason's, etc., etc. To recapitulate, it can be used for the following purposes:

Seamless Gold Crowns of any Gauge Plate now in use. Seamless Gold Crowns for Bicusps and Molars. Seamless Gold Crowns for Porcelain Facing. Seamless Gold Crowns for Incisors and Cusps. Seamless Open Face Shells. Seamless Bands and Collars for Regulating. Seamless Caps for Bridge Work, Etc.

A perfect articulation can be obtained, no matter how complicated. Any case can be made so as to fit accurately around the cervical walls of any tooth or root, which no other system can accomplish in so short a time. For economy of material, time, simplicity, rapidity, and results, this system cannot be equaled and should form a part of every practitioner's equipment. Correct fit at cervical margin.

A complete working outfit neatly packed in a box, with instructions accompanying same, will be furnished for the price of **\$25.00 and \$35.00**

Outfits sold on the monthly contract system, all orders to be accompanied by \$5.00 to insure express charges both ways, same to be deducted when outfit is accepted.

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For Sale by Dental Protective Supply Co.

Absolute Satisfaction

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GILBERT'S VITROID CEMENT

It is always uniform and will resist the fluids of the mouth longer than others.

Put up in three grades, based upon time required for setting. No. 1, quick setting; No. 2, medium; No. 3, slow.

Let us send you a free sample and full particulars.

PUT UP IN TWO SIZES

PRICE : { Package "A" \$1.50
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Fully guaranteed by the manufacturer, and for sale by all the leading dealers in dental goods, or will be sent by mail to all parts of the United States and Canada on receipt of price.

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Look for the above signature on the label; none genuine without it.

The MORGAN-MAXFIELD Disk Mandrel

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The Many Imitations and Infringements are Poor Substitutes.

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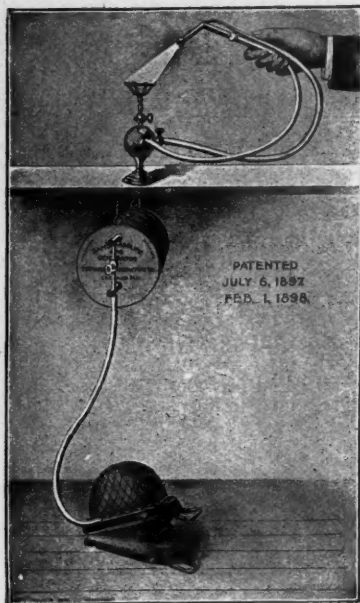
Carry a complete line of all articles manufactured by

The Dental Protective Supply Co.

"Fellowship" Alloy,
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"No. 1" Handpiece,
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"Dual Blade" Burs,
"Lithos" Cement,
Cataphoric Outfits,
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A Large and Choice Assortment of D. P. S. Co. Teeth



THE SAMS' COMBINATION BLOW-PIPE OUTFIT

(IMPROVED)

Will flow your Bridge quickly and smoothly—give your work a perfect finish and leave it free from discoloration. Does all soldering work and many other things better than they can be done with any other outfit or in any other way. BURNS GASOLINE. Heat always just what is needed. Blaze can always be relied upon. No smoke, absolutely NON-BLOW-OUT. THE SAMS' OUTFIT SATISFIES IN EVERY WAY.

Price Complete \$14.50
Without Foot Blower, 10.50

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READ THE OPINION OF A RECOGNIZED AUTHORITY:

D. M. WILLEN OFF



To The Webster Blow-Pipe Co

Gentlemen we have used your blow pipe in our school for about one year. It is good enough for us can solder anything that we desire to solder.

Truly

D. M. Willen

Dr. A. Tschirner's Dental Specialties.

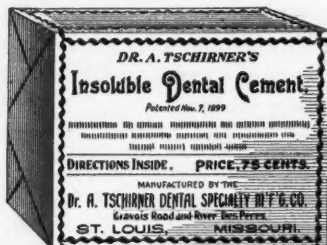
The following preparations, embodying the latest improvements in dentistry, recommend themselves to the profession for the following reasons:



Patented Fusible Porcelain Gold Enamel

is the only preparation, by aid of which a dentist can fuse Pure Gold on all kinds of Porcelain teeth in his own Laboratory in a few minutes time at a trifling cost, for the purpose of imitating Gold Fillings of every description. Gold Fillings made by aid of this preparation will not wear or peel off in the mouth or vulcanizer and will retain their lustre and brilliancy throughout the life-time of the tooth. This preparation is the most successful of recent inventions, opening up an entirely new and surely the most lucrative field in dentistry.

Price, \$2.50



Patented Insoluble Dental Cement.

This Cement differs from all other Cements, mainly in the fact that it does not contain Glue, Glycerine or any other Soluble Organic Substance. By aid of our Patented Chemical Process, all such substances, which in course of time "wash out," have been eliminated and an Insoluble Chemical Compound obtained.

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"Arsenol" The New Devitalizer.

(PATENT APPLIED FOR.)

Arsenol represents an entirely new method of successfully killing the pulp in a quick and painless manner. Arsenol is readily absorbed by the living tissue and cannot be traced in the tooth cavity after 24 hours.

Price, 40c



Instantaneous Plating Liquid.

The handiest and most useful novelty ever introduced for keeping all kinds of Surgical Instruments in first-class condition. Plates instantly all kinds of Plated Ware, Copper, Brass, etc. No battery required. No dirt. Plating guaranteed not to peel off.

Price, 35c



"Glossine" Rubber Polish.

(PATENTED.)

"Glossine" has the same effect on rubber plates as rouge on gold or blacking on shoes. A mirror-like finish is produced on rubber plates in a few seconds time.

Price, 25c

Tschirner's Temporary Stopping.

The hardest and yet most plastic Temporary Stopping on the market.

Price, 25c

Manufactured by the **Tschirner Dental Specialty Mfg. Co.**

Gravois Ave. and River des Peres, ST. LOUIS, MO.

FOR SALE BY THE DENTAL PROTECTIVE SUPPLY CO.

There is No Use Denying the Fact

that our Gold Plate and Gold Solders are well liked by the dentists. This recognition is well expressed by the many duplicate orders we receive, also by the complimentary letters our customers are kind enough to write.

Our business has grown because every purchaser of our goods gets value received for his money, also *satisfaction*. The *satisfaction* is thrown in, as it were, just to gratify you and retain your patronage.

Large and small orders are given the same consideration. We have only one way of doing business, and that is why every customer is satisfied.

In order to clinch our argument we ask you to study our price-list on opposite page.

Thomas J. Dee & Co

Gold and Silver Refiners and Assayers,
67 and 69 Washington St.

CHICAGO.

Goods Reach You by Return Mail

PRICE LIST.

14K Solder . . . per dwt. \$.65	Platinum Sheet	} Market Price
16K " . . . "	.75	or Wire, . . .	
18K " . . . "	.85	Platinum Irido	} " "
20K " . . . "	.95	Wire	
22K " . . . "	1.00	Pure Silver . . .	" "
Coin Solder . . . "	.95	Pure Zinc . . . per oz.	\$.10
Silver Solder . . . per oz.	.80	Pure Tin07
18K Gold Plate, per dwt.	.85	Pure Copper05
20K " " "	.95	Broaches . . . per doz.	1.00
22K " " "	1.05	Burs	1.00
Coin " " "	1.02	Carborundum	} per box .30
23K " " "	1.08	Strips	
24K " " "	1.10	Carborundum	} " .10
Crown Metal . . . "	1.10	Disks	
Clasp Metal . . . "	.85	White Diamond Alloy	
Clasp Wire . . . "	1.00	(quick setting and thor-	
18K Gold Wire " "	.90	oughly tested before	
20K " " "	1.00	being sold), \$2.00 per	
22K " " "	1.15	oz.; 3 ozs. for	5.00

All Metals Cut to Pattern Without Extra Charge.

We pay the following cash prices for

SCRAP GOLD, PLATINUM, ETC.

	Per Dwt.		Per Dwt.
Gold Fillings,	\$1.00	Gold Fillings,	\$.60 to \$.75
Gold Scrap,	\$.72 to .88	Scrap Platinum,	Market Price

Bench and Floor Sweepings Refined.

THOMAS J. DEE & CO.
GOLD and SILVER REFINERS and ASSAYERS
67 & 69 WASHINGTON ST.
CHICAGO.



Trade
TERRAPLASTICA
Mark.

**DR. J. C. GRAFT'S
IMPROVED COMPOUND.**

**A PERFECT
IMPRESSION**

Long sought for by the dental profession. Something entirely new. Just what the gold workers are looking for. No more checked teeth. Absolute safety in soldering investments. A complete investment soldered as readily as a single tooth. A metal cast direct from the impression. Finer, neater and better rubber work. Positively non-shrinkable. An absolute non-conductor.

Price per can, 25 cents. 5-lb. can, \$1.00.

Dr. J. C. Graft's Superior Base Plate.

The strongest and thinnest Base Plate on the market. Plastic as wax. Rigid as metal.

The Base Plate is the color of the natural gums, and is especially adapted for making temporary sets WITHOUT VULCANIZING.

Will not crack or break under any ordinary conditions, even if dropped upon the floor.

It fits perfectly and will not "curl" nor soften under the heat of the mouth.

For trial plates for taking the bite it is unexcelled. It is used to mount teeth for temporary sets for six months to a year. It does not change its form in the heat of the mouth, but retains its position like a metal plate, neither softening nor losing its shape. If broken it is easily repaired, and when repaired is as strong as ever. Packed in boxes containing twelve sheets.

Price per box, 50 cents.

If you
are looking for
something good
use

===== Dr. J. C. Graft's =====
Perfect Impression
===== Varnish =====

For
Varnishing
Plaster
Impressions.

No soap, oil or coloring matter needed with this preparation in your laboratory. No sediment or waste; leaves the model polished and hard.

Price per bottle, 25 cents.

For sale at all Dental Depots.

Manufactured
only by

TERRAPLASTICA MANUFACTURING CO.

Manufacturers of Dr. J. C. Graft's Dental Specialties.

5 West Park Street, - NEWARK, N. J., U. S. A.

AMES' SPECIALTIES

WITH Ames' Special Crown and Bridge Cement it is possible to easily force to its seat a crown or bridge. Because of the peculiar plasticity it will continue to flow until the piece is really in its proper position even when the adaption is very accurate.

This cement as a filling would eclipse all other zinc oxy-phosphates if it were not for its tendency to take on a slight discoloration in locations affording no friction of mastication or brushing. Upon the occlusal surfaces of molars it will resist attrition surprisingly.

In locations affording no friction, in which Crown and Bridge Cement might take on a slight discoloration, Ames' Metalloid will give a filling unsurpassed in texture by any cement which will retain a clean surface. The variety of colors in the powder of Metalloid makes it possible to match the natural teeth more accurately than with cement of any other manufacture.

These cements will withstand immersion in stains most satisfactorily, showing extreme closeness of texture, insuring durability as a filling.

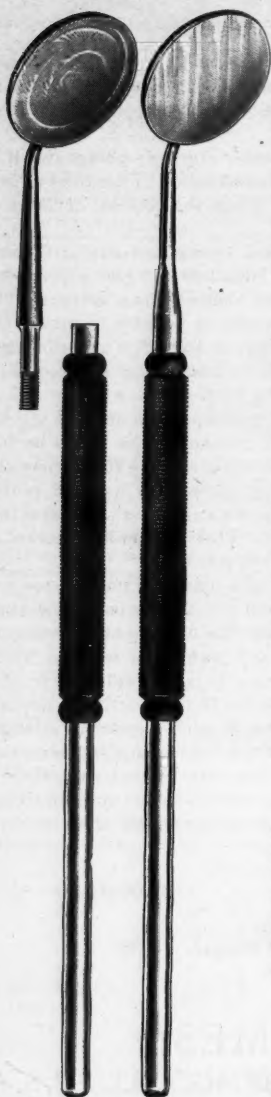
The "Flux" furnished with these cements makes possible uniform mixing and working qualities in all seasons and in all climates. The liquid as furnished will give desirable working qualities in a cool and dry atmosphere and can be made to give the same results during excessively hot and humid weather by the addition of the necessary proportion of "Flux" to the portion of liquid which is to be used for the mix. The "Flux" should be dissolved in the liquid before the incorporation of any of the zinc oxide.

New Process Oxy-Phosphate of Copper gives a mass extremely dense and durable as a filling material where its color will admit of its use. The tendency to the formation of salts of copper beneath the filling makes it valuable in the treatment of deciduous teeth and many permanent teeth in which thorough preparation of cavity is not advisable. It is also valuable in that it can be used for the correction of a defect in the fit of an artificial denture of any material. From a creamy mix a mass of such wonderful strength and density is obtained that it can be used of this consistency for correcting a defect of a plate by simply pressing the plate with cement accurately to place, the surface of the plate having been properly cleaned and the tissues made reasonably dry. A make-over may be deferred and often entirely avoided by such use of this material.

Metalloid Cement (15 Colors)	-	-	-	\$1.00-\$2.00
Special Crown and Bridge Cement	-	-	-	1.35
Oxy-Phosphate of Copper (Original)	-	-	-	1.00
New Process Oxy-Phosphate of Copper,	1.00-	-	-	2.00
Oxy-Chloride of Zinc	-	-	-	1.00
Flux	-	-	-	.25

W. V-B. AMES,
36 Washington Street, CHICAGO, ILL., U. S. A.

MOUTH MIRRORS.



WE here offer to the profession an article which is so much superior to anything ever made in this line, that there is no comparison between them. The back and stem are made in German silver. The handle is metal with a rubber grip. This does away with any wooden handles to break. The stem is solid in the metal handle and is flexible, so that the glass can be set at any angle with the handle.

All metal is nicely nickeled.

The glass is set into the back absolutely water tight, so that no saliva can penetrate behind the glass to make it filthy, and destroy the silvering. If the saliva has access to the back of the glass, it will turn the silvering yellow and make the mirror useless.

We also make these glasses with the shank bent the opposite way from which it usually is bent. This makes a convenient form of glass for buccal cases, as it is in much better shape for distending the cheek than the regular form, and the hand is brought entirely out of the way. This style is known as our Reverse Mirror.

We make two styles of handles, solid and cone socket. Cone socket handles can be furnished separate, and make excellent excavator handles.

PRICES.

5/8 or 7/8 in.	Solid Handle, Plain or Mag.,	\$.75
5/8 or 7/8 in.	Cone Socket	“ “ “ .85
1 in.	Solid	“ “ “ .85
1 in.	Cone Socket	“ “ “ .95
1 1/4 in.	Solid	“ “ “ 1.25
1 1/4 in.	Cone Socket	“ “ “ 1.35
Cone Socket Handles, Each,		.20
“ “ “	per Dozen,	2.00

DETROIT DENTAL MFG. CO.,

93 Shelby Street,

DETROIT, MICH.

BRUSH WHEELS.

PATENT APPLIED FOR.



This is something entirely new in the way of a Brush for cleaning the teeth. They are the smallest Hub Brushes made. Cuts are full size. The hubs are metal, and the brush is so constructed that the bristles are held in place by wedging. As no glue or cement is used to hold the bristles in place, these brushes can be sterilized by boiling in water.

These Brush Wheels are put up on cards, one dozen on a card, and are not sold in smaller quantity. Unless otherwise ordered, they are put up assorted, four flat wheels and eight cups on each card. They can be furnished all flat or all cups if desired.

Price, per Dozen, 75 cents.

THE DOWNIE BROACH.

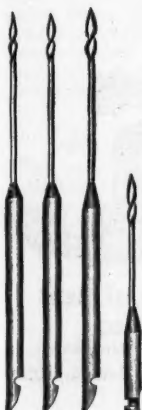


Something New.
Do Not Break.

Any broach or any piece of steel that is barbed or notched is very liable to break. These broaches are not barbed but are made in the form of a screw, which extracts the nerve much better than a barbed broach and will not break. Can be twisted up or tied in a knot without breaking. Made of the toughest steel known. Made to go into a smaller canal than any other broach. Made in regular length without handles, regular length with metal handles, and short with handles, for molars.

Price per half-dozen, - - - \$.75
Price per half-dozen, with handles, - \$1.00

UNBREAKABLE NERVE CANAL REAMERS.



There are but few dentists who have not had the annoying experience of breaking off Nerve Canal Reamers down in the canals, and all who have will appreciate a Reamer which will not break under any circumstances. These Reamers are just what the name implies, unbreakable. They are worked out of the toughest known spring tempered steel, and are very much tougher than any Reamer can be made by tempering after it is formed.

Made in four sizes.

Price, Each, 25 cents.

DETROIT DENTAL MFG. CO.

90 SHELBY ST., DETROIT, MICH.

Dr. R. B. Waite's Local Anæsthetic.



Safe, Reliable, Non-Secret.

FOR PROOF write us, stating what Anæsthetic you are now using, and receive a sample bottle *free of charge.*

Read what Prof. Boenning and Dr. Harding say:

PHILADELPHIA, PA., Oct. 1, 1899.
THE ANTIDOLAR MFG. CO.—*Gentlemen:* I am now using Dr. R. B. Waite's Local Anæsthetic, at the Philadelphia Dental College, with great success, and satisfaction to the faculty and patients.
Yours truly,
GEO. R. HARDING, D.D.S., of Tampa, Fla.

PHILADELPHIA, PA., Nov. 3, 1899.
Dr. GEO. R. HARDING.—*My Dear Sir:* I certainly take great pleasure in testifying to your skill as a Clinical Assistant and especially to your operations of extraction, and further, from all reports, consider the solution you use to Anæsthetize the mouth structures as eminently satisfactory. To the best of my knowledge no evil effects have followed its use in any case.

Yours very truly,
HENRY C. BOENNING, M.D.,
Professor of Anatomy and Surgery at the Philadelphia Dental College.

FREE Until Dec. 31, 1900, an all-metal or glass barrel Syringe upon receipt of your first \$5.00 order.

FOR SALE BY ALL DENTAL DEPOTS.

Price, 1 oz. \$1.00; 2 ozs. \$2.00; 6 ozs. \$5.00; 12 ozs. \$10.00.
Or mailed upon receipt of price.

THE ANTIDOLAR MFG. CO., SPRINGVILLE, ERIE CO., N. Y.

THE NEW GOULD High-Low Dental Chair.



**Canton Surgical and
Dental Chair Co.**

Sole Manufacturers.

Canton, Ohio.

The Lowry System of Crown and Bridge Work

Read What Prominent Members of the
Profession say of it

Since I received your machine, have given its use and merits careful consideration. It reduces the time and work of constructing a crown to the minimum, serving the purpose better than any similar system I know of, and the stamper I find a very valuable aid in swaging.

H. J. GOSLEE, D. D. S.
Demonstrator Crown and Bridge Work and Orthodontia,
Chicago College Dental Surgery.

Your system of Crown and Bridge work has been given only a partial trial, but we find it works very nicely, especially the method of swaging. It does away with tearing the gold, and is so compact and convenient that the otherwise tedious portion of the work is rendered simple. The system is a valuable aid to prosthetic work.

J. H. PROTHERO, D. D. S.
Supt. of Clinics, Northwestern University Dental School,
Chicago, Illinois.

I wish to express to you the satisfaction I have had in the past few months in the use of your Crown and Bridge outfit. I consider it much in advance of anything yet produced.

J. H. KENNERLY, D. D. S.
Professor Prosthetic Dentistry and Crown and Bridge
Work, Marion-Sims College of Medicine, Dental Dept.
Secretary National Association of Dental Faculties.

Your Crown and Bridge System is superior to any that I have ever seen. It is especially adapted to college work, because of its simplicity, the strength of metal of which the dies are made, the great saving of time, and the perfect contour work which it accomplishes. We are very glad to have it in our school.

D. J. McMILLAN,
Vice-President National Association of Dental Faculties,
Dean Western Dental College, Kansas City, Mo.

In reply to your query as to my opinion of your Crown and Bridge System, I have used it to a sufficient extent to satisfy myself of the fact that it is a most excellent arrangement for the carrying out of the purposes and designs for which it was constructed. The little pair of sliding tweezers for holding crown whilst soldering is very handy. The trip-hammer arrangement for striking up the crown is one that avoids all possibility of making mistakes in swaging, as is more or less liable when using the hammer alone, thus causing waste of material. But the best thing about the whole apparatus is the dies and their systematic arrangement. They certainly are admirable.

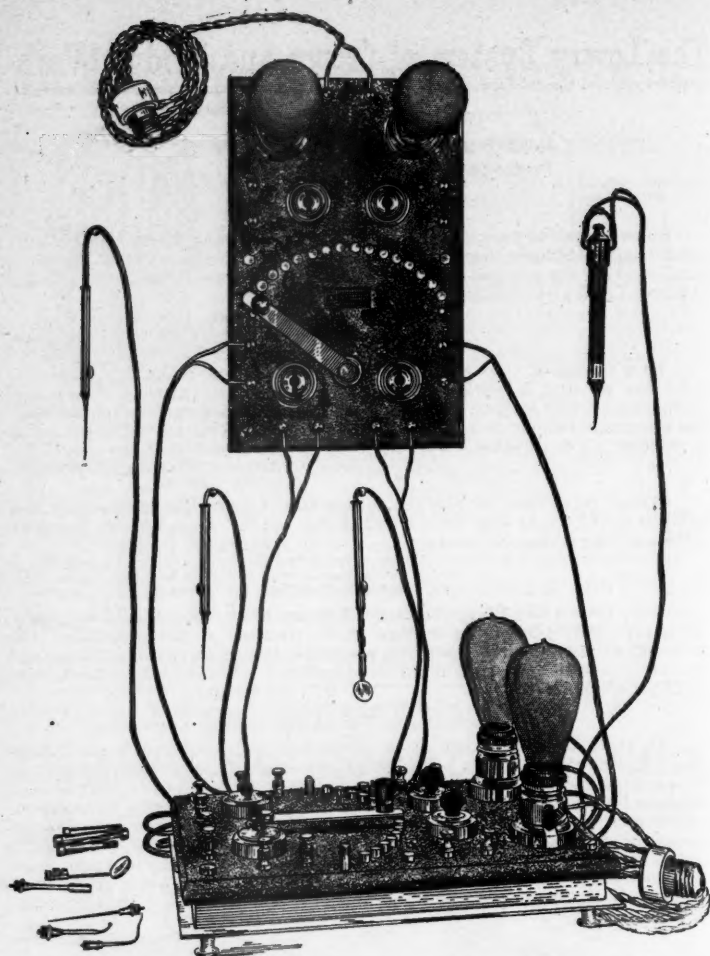
GEO. L. FIELD, D. D. S.
Professor Clinical Operative Dentistry, Dental Dept.,
Detroit College of Medicine.

Your System of Crown and Bridge Work has been in my hands some time, and I am now in receipt of the "male" dies for "bridge shells." I have hesitated to express myself regarding the "system" until I had fully demonstrated its utility. I am now prepared to assure you that my opinion is very favorable to you and your system.

L. L. DAVIS, D. D. S., Chicago.

... PRICE ... **\$20.00** Write for
Descriptive Booklet

H. S. LOWRY, D. D. S. 613 NEW YORK LIFE BLDG.
KANSAS CITY, MO.



TWO VIEWS OF THE RUSSELL MARBLE SHUNT AND THE ACCESSORIES FOR 110 VOLT
DIRECT CURRENT.

TO THE PROFESSION:

We beg to announce that the entire good-will and interest of our business of manufacturing Dental Specialties, has been transferred to the Wm. Porter's Sons' Co. of New York City. Thanking you for your support and bespeaking a continuance of your favors toward our successors, we now pass out of business and dissolve.

Very truly yours,

THE RUSSELL ELECTRIC MALLETT CO.,
Monrovia, Md.

DEAR DOCTOR:

As successors to the Russell Electric Mallet Co., we have come into possession of all their machinery, patterns, appliances, etc., and have secured the services of their manager to conduct our Dental Department and continue the manufacture of the Russell Dental Specialties. Our policy will be the same as that of our predecessors; that is, we will strive to send out our goods in the best possible condition, to improve them in every way that can be discovered and to broaden our line as rapidly as new appliances can be perfected. Descriptions and prices of these specialties free upon application.

Very truly yours,

WM. PORTER'S SONS' CO.,
271 Pearl St., New York City.

The BEST Known



KNOWN the Best

The Improved Universal Matrix Carrier.



Patented Dec. 29, 1896.

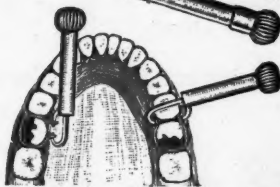


It is simple, plain, reliable, and antiseptic; quickly attached to any sized tooth without change of band. It is made to carry the thin steel ribbon matrix, which can be easily forced between the teeth. You have a smooth finished surface when band is removed. In knocking fillings, especially gold, it is just what is required. The band is so thin and polished that when removed the fillings are knocked together. They need no finishing at the point of knocking. Sent to any part of the United States on receipt of post-office order for **\$3.00**. Bands, 50c per doz.

The Standard Matrix Retainer.



Patented Aug 27, 1895.



This retainer can be used upon the buccal, labial, lingual, and palatine surfaces of the teeth.

Price, **\$2.00**.

Address

DR. J. M. STROUT, Dentist,
457 1/2 Congress Street,
PORTLAND, ME.

For sale by the Dental Protective Supply Co., Chicago and Philadelphia.

"Goodyear Crown" FLEXOR Dental Gum

For more than twenty years sold under the trade-mark, "BOW SPRING."

Goodyear Crown Flexor. (Original "Bow Spring.")	$\frac{1}{4}$	pound box at.....	\$0.50 per box
	$\frac{1}{2}$	" " " " " " " "	0.90 " "
	1	" " " " " " " "	1.75 " "
	5	" " " " " " " "	1.60 per pound
Goodyear Crown Pink.	$\frac{1}{4}$	pound box at.....	\$0.75 per box
	$\frac{1}{2}$	" " " " " " " "	1.40 " "
	1	" " " " " " " "	2.60 " "
	5	" " " " " " " "	2.50 per pound
Goodyear Crown Black. (Gray Black.)	$\frac{1}{4}$	pound box at.....	\$0.50 per box
	$\frac{1}{2}$	" " " " " " " "	0.90 " "
	1	" " " " " " " "	1.75 " "
	5	" " " " " " " "	1.60 per pound
Goodyear Crown Ethiopian. (Jet Black.)	$\frac{1}{4}$	pound box at.....	\$0.50 per box
	$\frac{1}{2}$	" " " " " " " "	0.90 " "
	1	" " " " " " " "	1.75 " "
	5	" " " " " " " "	1.60 per pound
Goodyear Crown Light Red. (Original No. 1 Improved.)	$\frac{1}{4}$	pound box at.....	\$0.55 per box
	$\frac{1}{2}$	" " " " " " " "	1.00 " "
	1	" " " " " " " "	1.90 " "
	5	" " " " " " " "	1.75 per pound
Goodyear Crown Maroon.	$\frac{1}{4}$	pound box at.....	\$0.50 per box
	$\frac{1}{2}$	" " " " " " " "	0.90 " "
	1	" " " " " " " "	1.75 " "
	5	" " " " " " " "	1.60 per pound
Goodyear Crown Dam	Box containing 5 yds.	6 in. wide, thin.....	\$1.00
	" " " " " "	5 " " " " " " " "	6 " " " " " " " "
	" " " " " "	5 " " " " " " " "	7 " " " " " " " "
	" " " " " "	5 " " " " " " " "	7 " " " " " " " "

Goodyear Crown Corrugated Soft Rubber Points.



PRICE PER DOZEN, 30 CENTS

MANY testimonials as to the merits of the Goodyear Crown Pink and Ethiopian Gums have been received.

Every dentist should appreciate the benefit derived from being able to buy direct from the manufacturer, thus saving the large profits exacted by combinations. The quality of the goods is guaranteed.

Orders should be accompanied by postal money order.

Goods will be delivered post or express paid.

AMERICAN HARD RUBBER CO.

Successor to THE INDIA RUBBER COMB CO., Established 1851.

9, 11 and 13 Mercer Street - - - NEW YORK.

Beta-Eucain

(Eucain Hydrochlorate "B.")

In a report made at the Academy of Medicine, Paris, March 29, 1898, published in the *Bulletin Medical* of March 30, 1898, **Professor Reclus** stated:

"Beta-Eucain possesses a number of indubitable advantages. In the first place, its solution can be boiled without undergoing decomposition, thus permitting it to be sterilized by heat. This cannot be done with cocain.

"In the second place, solutions of Beta-Eucain are stable, and this is the case to such an extent that he has been able, in conjunction with Dr. Legrand, to perform a number of long and delicate operations with solutions that were more than four months old. This is far from being possible with cocain solutions, as they change at the end of four or five days. Finally, and this is really the most important point, Beta-Eucain is $3\frac{1}{4}$ times less toxic than cocain. There is one more very marked advantage in Beta-Eucain which is of special importance to dentists. The practice after cocainization to let the patients get up and go after the local anesthesia is not free from danger, as, with the assumption of the erect posture, there frequently appear vertigo, a tendency to syncope, gastric pain and vomiting. **With Beta-Eucain, however, the patient can get up after the operation and immediately walk without any risk, and this fact alone should cause it to be used instead of cocain in all dental operations.**"

**EKA-IODOFORM, FORMALIN, FORMALIN STERILIZER, PARAFORM
TRIKRESOL, CREDE'S CITRATE and LACTATE OF SILVER and XEROFORM.**

SCHERING & GLATZ, New York,

Literature upon application.

Sole Agents for United States.

Do You Use Ruby Crystal?

Every progressive Doctor has discarded
all other abrasives and uses

RUBY CRYSTAL

in wheels, discs, points, files, hones, powder—and last but
not least,

DENTAL POLISHING STRIPS,

the latest and most perfect strips produced. Write for illus-
trated booklet to the

F. W. GESSWEIN COMPANY,

39 JOHN ST., NEW YORK.

Send orders to your regular dealers; they all carry stock.

MORGAN, HASTINGS & CO.'S

LATEST IMPROVEMENTS IN

FILLING MATERIALS.

The New Extra Pliable Gold Cylinders.

These cylinders are, undoubtedly, the most perfect Filling Material as yet placed before the profession. Notwithstanding their comparatively high cost, they are having an enormous sale, are said to work almost like a plastic gold, and are absolutely reliable in all operations. Especially valuable in frail teeth, as they pack densely with minimum pressure.

Price, \$2.25 per 1-16th oz.; \$17 per 1-2 oz.; \$34 per oz.

The New Gold and Tin Cylinders.

Designed especially for use in teeth of medium or poor quality. A very prominent member of the profession comments upon them thus: "I consider them almost indispensable for use at the cervical wall in large contour fillings in bicuspid and molars, believing that they possess a **PRESERVATIVE QUALITY** not found in pure gold alone. I do not recall a single instance of failure, *i. e.*, of subsequent decay at the cervical wall, and am of the opinion that they are extremely useful in numerous other cavities in teeth of poor quality."

Price, \$2.85 per 1-8 oz.; \$11 per 1-2 oz.; \$22 per oz.

Our regular productions of Gold Foil, Gold Cylinders, Rolled Gold, Ropes, etc., are standard all over the world.

Price, \$4 per 1-8 oz.; \$15 per 1-2 oz.; \$29 per oz.

Order direct if not obtainable from your Dental Depot.

Morgan, Hastings & Co.

819-821 Filbert Street,

Philadelphia.

STANDARD CEMENT FOR PERMANENT FILLINGS AND CROWN AND BRIDGE WORK.

A Cement That Has Stood the Test for Years.



**GUARANTEED TO FULFILL EVERY CLAIM MADE FOR IT OR
MONEY REFUNDED.**

Unlike all others, this powder and liquid remain uniform and unchangeable, not being affected by age or thermal variations. Their union is so provided for in the preparation that it is a true and lasting one.

As a filling adapted to all cavities, **STANDARD CEMENT** is permanent. It is hard, bone-like and susceptible of a fine enamel finish. The corroding fluids of the mouth have no effect whatever upon it.

In its adaptability to Crown and Bridge work it is unexcelled.

Furnished in two colors of powder. Any desired shade may be obtained by proper mixing and blending.

Price, per package, \$1.50

**Sample Free
on Application to**

The Cleveland Dental Mfg. Co.

CLEVELAND, OHIO.

Oxide of Zinc is first combined with other metallic oxides. The product is then vitrified and ground by specially constructed machinery so as to be impalpable. This exceedingly fine powder is subsequently subjected to our new process, so that at this stage we have a product not only of the most supreme fineness but also of almost twice the density of any other powder, consequently making a filling correspondingly hard and durable.

In the composition of the liquid, however, lies the greatest weakness of most cements. To have both liquid and powder act properly together is the touchstone of success. Our liquid acts perfectly. It is composed of chemically pure materials, carefully selected, and prepared by a slow special process, which secures the product from crystallization under any conditions.



Hundreds of Dentists

have secured a large permanent income by judicious investments in Mexican Plantations at a very small cost.

Dr. Prothero, of the Northwestern University Dental School, visited one of these Plantations, and in a report states that it greatly exceeded all of his expectations.

The Mexico Planters' Association

is planting to coffee, rubber, vanilla and

other tropical products, 6,000 acres of rich land, located near the town of Salto, in the most prolific section of Southern Mexico. The development is guaranteed. The total number of shares is 6,000, each share representing the perpetual average income from one acre brought to the highest state of cultivation. The shares are being sold for \$300 each, upon monthly payments of \$2.50 for the first forty months and \$5.00 per month for the last forty months. There are no other payments, fines or assessments. Suspension of payments for ninety (90) days will be given upon request. In case of death, all money paid the Association will be refunded to the legal heirs.

THE ROYAL TRUST COMPANY, of Chicago, holds the title to the land, and also all money from the sale of shares until the work has been done according to contract.

THE AMERICAN BONDING AND TRUST COMPANY are bondsmen for the Treasurer for the sum of \$50,000.00.

Dividends paid annually. The first dividend will be paid in 1901 A. D., and annually thereafter. The first dividend is estimated at 10 per cent; the second, 10 per cent; the third, 15 per cent; the fourth, 25 per cent; the fifth, 40 per cent; the sixth, 50 per cent.

The following table shows the cost and profit of five shares in the Mexico Planters' Association:

COST ABOVE PROFIT.		PROFIT ABOVE PAYMENTS.	
First year.....	\$150.00	Sixth year.....	\$220.00
Second year.....	120.00	Seventh year.....	550.00
Third year.....	105.00	Total.....	\$770.00
Fourth year.....	145.00		
Fifth year.....	50.00		
Total.....	\$570.00		

The above estimates of profit are conservative and should be taken into consideration in deciding the number of shares you wish to carry.

Do not delay, but write at once for our literature. Address all communications to

E. E. CALKINS,

Mexico Planters' Association.

188 Madison St., Chicago.

FORMULA.

Borolyptol, Menthol, Eucalyptus, Thymol, Atrophia, Hamamelis, Chloral, Trinitrin, Aqua-Pura, less than one-half of one per cent Cocain.

Inject close to the gum margin, both sides tooth. Keep needles clean. Gums HEAL MORE RAPIDLY than when NOT used.

This ANTISEPTIC has been used for a number of years with great success by some of the best dentists in this country, and we guarantee it to be the best on the market, and second to none.

It will absolutely prevent pain in extracting. (No sloughing.)

PRICE:

2 Ozs., \$1.50 10 Ozs., \$5.00



FREE! FREE!

With the first \$5.00 order we give one

All-Metal Syringe

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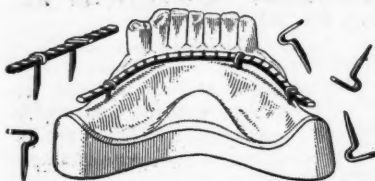
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University of the State of New York,

216 West Forty-second Street, New York.

Co-Educational. Members of the National Association of Dental Faculties.

The Session of 1900-1901 Begins October 9.

Last Day of Matriculation, October 19.

**New and Commodious Quarters in the Heart of the City,
With Superior Facilities for Infirmary Practice.**

This college, denominated School, under the present laws of the State of New York, and coming under the head of Professional and Technical Schools, was incorporated in June, 1892. It has now reached its eighth annual course and stands on a substantial foundation, comprising all the necessary implements and paraphernalia for the teaching of dentistry, and at the same time giving the dental student a medical training except in the strictly dental branches.

Practical post-graduate instruction in operative and prosthetic dentistry will be given, in the infirmary, throughout the year.

The Diploma given by the New York Dental School is issued by the University of the State at Albany, only by permission of the New York Dental School to the State Board of Regents, which is the University of the State of New York.

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Cor. Van Buren and Clark Sts., CHICAGO, ILL.

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This School supplies free for the use of the students, all the usual text books, reference books, dictionary, etc.

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The College is situated on the great "Union Elevated Loop," making it accessible from all parts of the city. 200,000 people use this loop every day. Clinical advantages are unsurpassed.

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One of the Oldest Dental Colleges in the West.

The Fourteenth Annual Session, Oct. 8, 1900.

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LLOYD S. GILBERT, D.D.S.,	Professor of Prosthetic Dentistry and Metallurgy
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Except students are admitted to advanced standing, three full courses of seven months are required for graduation from this school. Requirements for admission are those laid down by the National Associations.

For catalogues and further information address or apply to

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Incorporated by the Legislature of
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THIRTY-FIFTH COLLEGIATE YEAR.

The collegiate year work of 1900-1901 will consist of a **free** Infirmary Course (**optional**) of daily infirmary practice, from May 5, 1900, to October 1, 1900, to students matriculated for the collegiate year, and a **Lecture Session (obligatory)** of lectures, practical classes in sections and a daily infirmary practice, from October 1, 1900, to May 15, 1901.

A special feature of the curriculum of the New York College of Dentistry is that students work DAILY in the infirmary for the entire period of their college attendance, first, second and third year, under the direction of the superintendents and demonstrators of the infirmary.

Registration for the Lecture Season
of 1900-1901 Closes October 10, 1900.

Applicants will be admitted to the Lecture Session of 1900-1901 as **Degree, Special or Session Students.**

1. **DEGREE STUDENTS**—Those matriculating towards the degree of D. D. S. under the following preliminary educational requirements.

a. For those who were matriculated in a registered dental or medical college prior to January 1, 1896, no preliminary educational conditions will be required, either for the degree of the college or the license examination of the State of New York;

b. For those who were matriculated in a registered dental or medical college between January 1, 1896, and January 1, 1897, a certificate of two years of high school attendance or their equivalent in credentials from schools registered by the regents or pass cards for twenty-four counts obtained by regents' examinations;

c. For those matriculated between January 1, 1897, and January 1, 1900, a certificate of three years of high school attendance or their equivalent in credentials from schools registered by the regents or pass-cards for thirty-six academic counts obtained by regents' examinations.

Special attention is called to the fact that there will be required of those not matriculated before January 1, 1901, a certificate of four years of high school attendance or their equivalent from schools registered by the regents or pass-cards for forty-eight academic counts, obtained by regents' examinations.

A graduate of a dental college out of the State of New York is not admitted to the dental license examinations of the State of New York unless he has fulfilled the preliminary educational requirements of "Degree Students."

2. **SPECIAL STUDENTS**—Those who, without any preliminary educational requirements, matriculate, but not toward the degree, and attend the infirmary practice, with lecture attendance free, pending their securing, by regents' examination, the preliminary educational requirements to become a "degree student," with their "special student" period credited as pupillage only. On the date of their obtaining twenty-four counts they become "degree students."

3. **SESSION STUDENTS**—Those who hold credentials of preliminary education equivalent to "a certificate of entrance into the second year of a high school," matriculate for their first or first and second lecture sessions but not toward the degree, pay the fees and are eligible to the examinations and certificates of the sessions. The certificate of the session or sessions will admit them to advanced standing toward the degree in dental colleges out of the state belonging to the National Association of Dental Faculties.

For full details of the College send for an announcement of 1900-1901 and a copy of "Form I," addressing

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205-207 East 23d Street, NEW YORK, N. Y.

Birmingham • Dental • College,

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WM. F. LOCKWOOD, M. D., Professor of Materia Medica.

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The Baltimore College of Dental Surgery, the first and for many years the only Dental School, offers facilities for the study of Dentistry proper, such as age and experience only can give. Its immense museum complete apparatus, large and well-arranged building, and carefully-studied curriculum give to its students great advantages and opportunities, both theoretical and practical, while its age gives its Diploma a dignity far outranking all other colleges—a Diploma honorably represented in all civilized countries and held by the most distinguished members of the Dental Profession.

The fact that Dentistry must be *practically taught* is fully recognised, the College Infirmary, a most complete, large and handsome Hall, being daily filled with clean and respectable patients, of a class nearly equal to those of the average dentist. *This Infirmary is open all the year*, students paying an entrance fee which is deducted from those of the regular succeeding course.

The session begins October 1, closing in April. A large corps of Demonstrators, always present, put in actual practice the teachings of all lectures on Dentistry—leaving nothing undemonstrated. *All methods are fully taught*, all appliances and apparatus used; the making of instruments and the most elaborate gold and continuous-gum work, and all the cases arising in ordinary practice, with many which are rarely seen, carefully demonstrated.

Commencing October 1, 1895, this College will admit women as students, subject to the same requirements as men.

The College has formed an alliance with the College of Physicians and Surgeons, by which its students are privileged to attend all lectures and clinics. The patients of this medical school numbered last year over 40,000.

Graduates of the Baltimore College of Dental Surgery are required to attend but *two sessions* at the College of Physicians and Surgeons prior to presenting themselves as candidates for the degree of M. D. (See catalogue.) In accordance with the resolution adopted by the National Association of Dental Faculties in the City of New York on the 4th of August, 1884, and which went into effect for the session of 1885 and 1886, the qualifications for entering the Junior Class are a preliminary examination in the ordinary English branches.

TERMS OF GRADUATION.—Attendance on three Winter Courses of lectures in this College. As equivalent to one of these we accept *one course* in any reputable Dental College. *Graduates in Medicine* can enter the Junior Class.

FEES.—Matriculation (paid once only), \$5.00. Tuition fees, \$100.00. Diploma fee, \$30.00. Dissecting fee, \$10.00.

Students corresponding with the Dean will please be careful to give full address, and direct their letters to

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**One of the Largest and Most Thoroughly Equipped
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**A Leader in Scientific and Practical Dental Education,
with an Unsurpassed Clinic.**

Session of 1900-1901 begins October 3d, 1900.

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Furnishing and equipment all new and modern.

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 J. BIRD MOYER, B.S., Ph. D., Professor of Chemistry and Metallurgy.

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Instructors in Operative Dentistry.

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LOUIS BRITTON, D.D.S.

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Chair of Anatomy

W. J. GRIFFIN

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 Dr. C. E. FRANCIS,
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 Dr. H. C. REGISTER.

This College has accepted the requirements of the National Association of Dental Faculties with regard to the admission and graduation of students. (See announcement for 1900-1901, which can be procured from the Dean.)

FALL SESSIONS.

THE FALL COURSE will commence September 11, and continue until the 1st of October, and will be free to those who matriculate for the regular session.

THE REGULAR SESSION

Will commence on October 1, 1900, and continue until May 1, 1901.

CLINICAL PRACTICE.

Lecture hours excepted, general clinical practice is available for the student continuously through the day. Competent instructors are always present.

GRADUATION IN MEDICINE.

By an arrangement with Jefferson Medical College, such students as may desire to do so can, if found qualified, obtain the two degrees, in Dentistry and Medicine, in five years. Students desiring to graduate in medicine are required to notify the Dean of their intention at the beginning of their second course.

FEES.

Matriculation (paid but once).....	\$ 5.00
For each year (Demonstrators' Ticket included)	100.00
Dissecting Fee.....	10.00
Diploma Fee.....	50.00

Board can be obtained at from \$4.00 to \$6.00 per week.

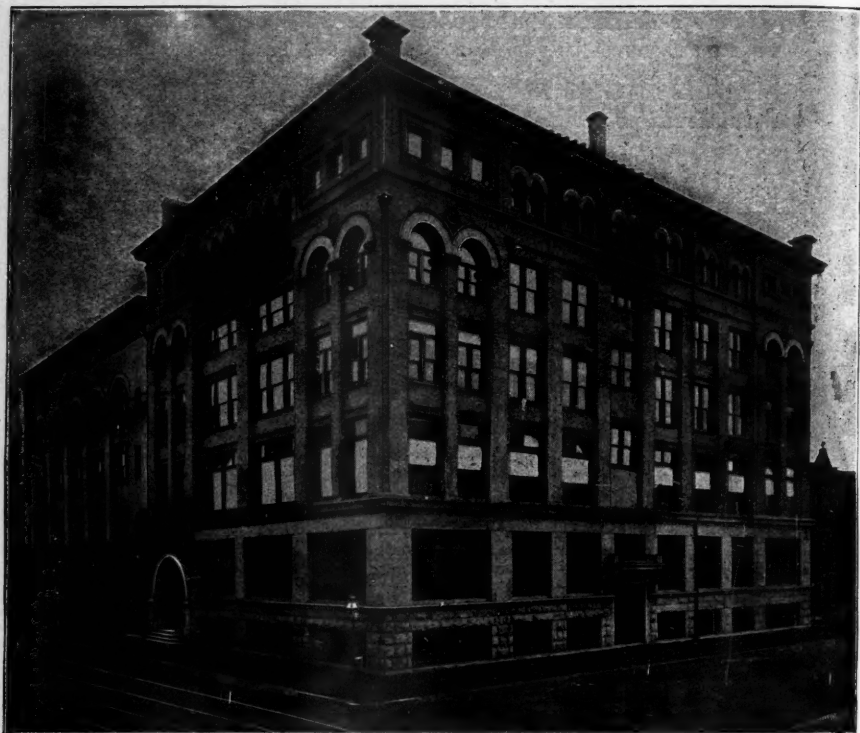
The instruments and tools required can be procured for from \$35.00 to \$45.00. This sum does not include the price of dental engine.

For further information, address

WILBUR F. LITCH, M.D., D.D.S., Dean, 1507 Walnut St., Philadelphia.

Or, GEO. W. WARREN, A.M., D.D.S., Secretary, 1338 Walnut St., Philadelphia.

THE CHICAGO COLLEGE OF DENTAL SURGERY.



THE COLLEGE BUILDING.

The cut which appears above is a splendid representation of the exterior of the building erected, owned, and used exclusively by the college. It is the largest and most complete of its kind in the world.

It is a five-story and basement structure. The basement and first story is of rock-faced Bedford stone, and the superstructure of pressed brick and terra cotta, with terra cotta trimmings. The frontage of eighty-five feet on Harrison street and one hundred and twenty feet on Wood street gives a perfect, uninterrupted light.

The building has three entrances, the main one through a beautifully ornamented cut-stone doorway.

The interior is finished in hard wood, according to the latest idea of elegance, convenience, and comfort. There are 61,200 square feet of floor space in the building.

Chicago College of Dental Surgery.

Annual Winter course will begin October
3d, 1900, and end May 1st, 1901.

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